# Designing for Sustainable Communities: The Abuja Federal Capital Territory of Nigeria

By

**Ramatu Aliyu P10460437**

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## ABSTRACT

The planned Federal Capital Territory of Nigeria - Abuja is the context of this research. Abuja was conceived and conceptualised under a Master Plan designed by Kenzo Tange and Utec Associates to replace Lagos as the new Capital City for the Federal Republic of Nigeria in 1977. This came about because of the unstructured and unplanned facilities characteristically evident in buildings, communities and some critical infrastructure in Lagos. These have combined, with the rapid rates of urbanisation, and relative to lack of supporting infrastructure and services, to render Lagos as one of the most overcrowded and dysfunctional cities in the world. Housing shortages, urban sprawl, traffic congestion, overburdened and dilapidating physical infrastructures and services, and poor quality environment have become the defining characteristics of Lagos. These were the issues that forced the idea of relocating the Capital City elsewhere in the country that resulted in Abuja's selection as the New Capital City for Nigeria in 1977. Kenzo Tange Associates, an authority in urban design was appointed that resulted in a Master Plan to guide the development of the new city. The resultant Master Plan was designed with the specific peculiarities of Lagos in mind to avoid reoccurrence, although, the concept of environmental sustainability and development was not the preoccupation of urban design and planning in the 1970s, Abuja Master Plan incorporated the concepts, principles, and practice of sustainable development today. Nevertheless, the implementation of the Abuja Master Plan has drawn consternation from built environment professionals. Anecdotal evidences exist to suggest that Abuja is rapidly incubating all the urban problems experienced in Lagos in the 1970s. Sequel to the above therefore, this thesis aims to develop a conceptual framework that will enable Abuja develop into a 21st century functional and resilient City of sustainable communities. The view pushed in this thesis is that not only does sustainable approach to design, implementation and management of urban communities holds huge capacity for bridging urban inequalities and prudent resource management; it holds the key to the survival of cities. The main aim of the research; to produce a conceptual framework to guide the development of Abuja Capital Territory into a 21st Century City of Sustainable Communities. To accomplish this aim, a mixed method of research methodology has been used for data gathering, an approach informed by the epistemological and ontological positioning of the researcher. Data obtained were analysed using the Statistical Packages for Social Sciences (SPSSx) and the results resulted in a conceptual model illustrating 'the road map' to sustainable community development approach to Abuja in becoming a 21st century sustainable city. The study has successfully highlighted and resolved key issues centred around the sustainability of Abuja. It has also answered fundamental questions of whether Abuja can, and how it can develop into a 21st Century City of Sustainable Communities. Therefore, it is expected that the conceptual framework which is the outcome of this research becomes a reference manual to both urban decision makers, built environment professionals, and other stakeholders in planning the development of Abuja Capital Territory into a 21st Century City of Sustainable Communities.

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**DEDICATION**

To God and Humanity

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# Chapter One

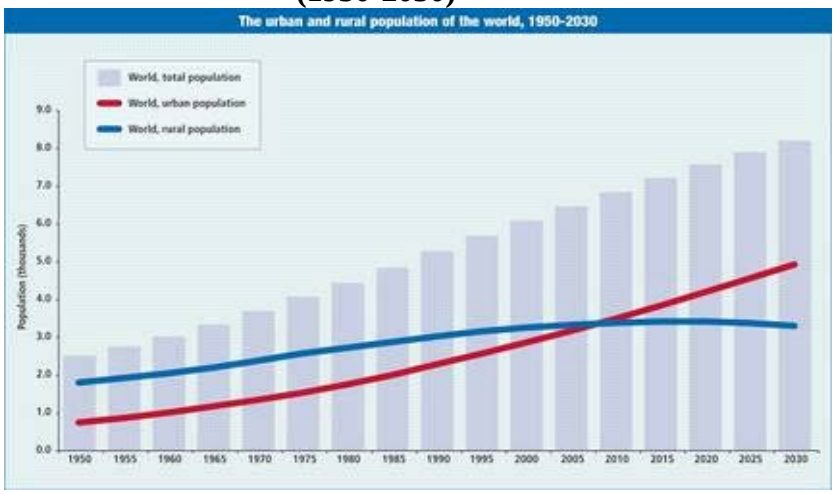
## 1.0 Introduction

## 1.1 Background of Research

The four main interlinking drivers underpinning the desire for sustainable communities are; economic growth, urbanisation, climate change, and globalization; and the simultaneous interactions and convergence of these factors have raised serious global concerns about the regenerative or carrying capacity of the global environment (UN-Habitat, 2011). Data suggest that the global population grew annually by 1.76 per cent between 1950 and 2000, which translates to mean that 71 million people were born annually, resulting in huge and insatiable demands on the global environment for natural resources to facilitate economic growth and development (Auty, 2001a, 2001b; Greiner, et. al., 2008). A direct consequence of this has led to the acceleration in the demand for global natural resources that has invariably led to the depletion in natural resources, which are non-renewable, thus posing serious constraints to growth and development (Meadows et. al. 1972; Neumayer, 2000). This has also drastically reduced global 'sinks' necessary to absorb wastes and pollution associated with growth and development (Kauppi and Sedjo, 2001).

Demographic transition and continuing growth of large cities have been notable features of the trend in global population, particularly in the last two decades of the twentieth century. The revelation in Figure 1.1 that the proportion of global population living in cities exceeded the 50 per cent mark in 2008 is significant, given that it will be the first time in human history, according to available data, that urban population exceeded rural population. Instructively however, population forecast shows that between 2011 and 2050, global population will increase by 2.6 billion, raising total population figures from 7 to 9 billion (UN, 2011). Consequently, at the same time, raising total population figures forecast across urban cities by 2.6 billion, which will translate from 3.6 billion in 2011 to 6.3 billion by 2050. A critical look at this trend reveals that not only is the population growth expected in the next four decades is expected to occur in cities, but also cities are expected to draw in some of the rural population (UN, 2011).

**Figure 1.1 Estimated and Projected World Urban and Rural Population (1950-2030)**




**Source:** World Urban Prospects: The 2005 Revision, Economic & Social Affairs (ESA/P/WP200) 2006.

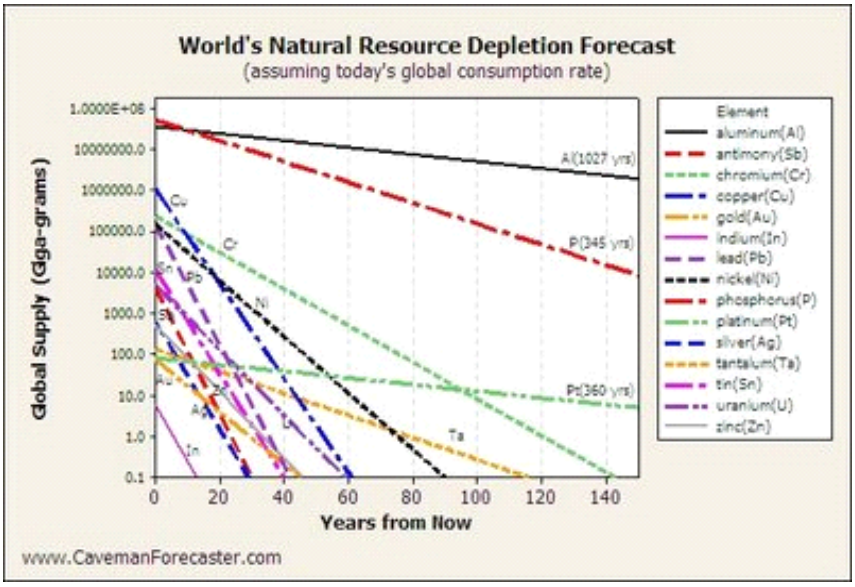
Given that the developed nations have largely urbanised many of their cities, the latest wave of urbanisation is expected to occur largely in the developing countries, particularly Africa and Asia - in 2011, 78 per cent of the developed countries' population lived in cities, while only 47 per cent of the population of developing countries were urban dwellers (UN, 2011). By 2050, it is expected that the developed countries will assume an urbanisation rate of 86 per cent while that of the developing countries is estimated at 64 per cent. This suggests that by 2050 cities across the world in both developed and developing countries would achieve improved urbanization thresholds in the provision of critical social facilities and infrastructure including creation of employment opportunities that will attract population surge from rural areas (UN, 2011).

It is therefore not surprising to observe that a key manifestation of the rapidly urbanising world is the continuing growth of large cities, including mega-cities. Furthermore, it is instructive to note that the number of mega-cities rose from only two in 1970 to 23 in 2011, with 17 of them located in developing countries (UN, 2011). While cities with population of one million and above are expected to account for more than 47 per cent of the global population, megacities with more than 10 million people are expected to experience the most growth, rising to 37 by 2025 (UN, 2011).

According to Ehrlich and Holdren, 1971, Orenstein 2004; the sustained growth in global population index, on one hand, and the disproportionate spread on the other, which is accounted for by cities has major implications for the global natural environment. Therefore, (Seidl and Tinsdell,1999; Berck, et. al., 2012) argued that the link between global population and the environment can be gleaned from the concept of the 'carrying or regenerative capacity of planet earth', which is a demonstration of the measure of the global population the planet can support at any given time. Berck et., al (2012) also postulate that, the interface between the environment and population is an interesting one, stressing that while the environment limits the carrying capacity for people, it is actually the people's concerns or lack of it for the environment that moderates environmental degradation. In other words, it is the environmental footprints of people that define the extent they will be willing to go in caring for the environment that eventually determines change in the environment.

Thus, it can be argued that the earth's carrying capacity declines based on the speed of global environmental deteriorations however the severity of the impact is influenced by the collective concerns shown by people for the environment (Berck, 2012). It is worthy of note therefore that the gradual increase in the number of mega cities in the world suggests that countries where such mega cities are situated though witnessed some form of economic prosperity through expansion in air, rail and road networks (Yeoman et al., 2012). Unfortunately, this has impacted on the environment and global natural resources in some ways (UN, 2012; Lamond, 2014). Interestingly and according to the UN (2011) forecast, the world should be prepared to witness an upward increase in the number of mega cities between now and 2050. This point is consistent with and further buttressed by Awotona's (2014) assertion about the criticality of constructing such mega cities particularly in developing countries like Nigeria given their size, population density and social inequalities. Hence it becomes germane to design for sustainable communities.

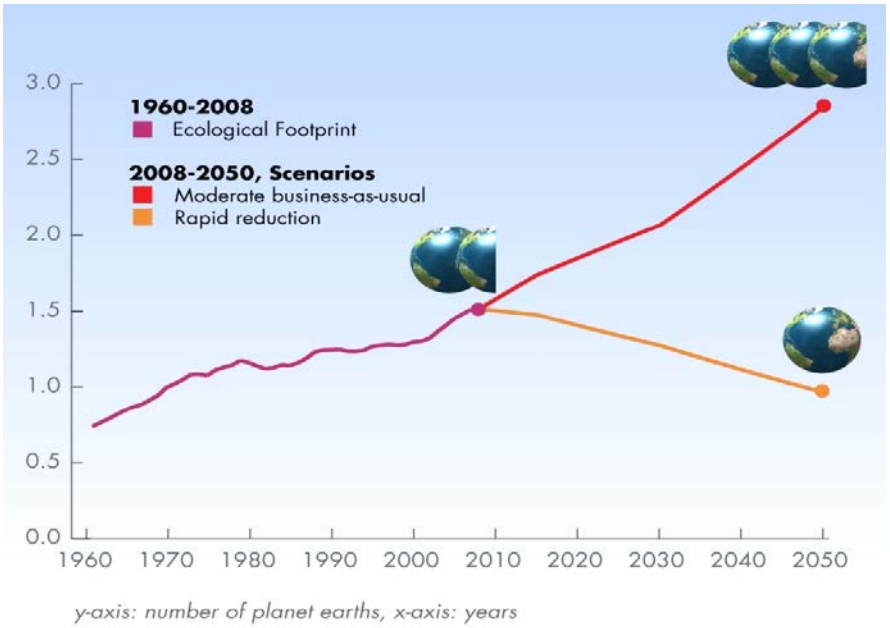
**Figure 1.2 World's Natural Resource Depletion Forecast**




**Source:**[www.cavemanforecaster.com](http://www.cavemanforecaster.com)

From the above, the impact of population induced global demands for natural resources such as wood timbers and construction aggregates continues to manifest in various forms and dimensions summed up in global climate impacts (Perry, et. al. 2007; UN, 2012). As shown in Figure 1.2, the current rate of depletion in global natural resources is alarming and constitutes a major problem (UN, 2012). Also apart from the severe constraints on further growth and development owing to scarcity of critical growth inducing and facilitating resources such as energy, water, and food (Leng, 2013), its effects on the abilities of future generations to fulfil their own needs has become a major concern (WCED, 1987). Sequel to the above, the costs associated with rapid global natural resource depletion are vividly captured in Figure 1.3.

**Figure 1.3** **Ecological Footprint Scenario**




**Source:**www.footprintnetwork.org

According to data and descriptive statistics published by UN-Habitat (2010), it is suggested that the current global natural resource demand requires the carrying capacity of one and a half planets (Rees and Wackernagel, 1996). Thus if the current 'business as usual scenario' continues as demonstrated in the consumption and wastages of resources by people living on the planet earth, experts expects that it will increase the consumption of natural resources which will quintuple by 2050 (UN, 1998). Thus it would require the equivalent of more than two or three planets' carrying-capacity to meet global natural resource demands (Rees and Wackernagel,1996); Montanarella, 2012. However, as Figure 1.3 shows, if sufficient collective concerns are demonstrated and sustainability actions taken, which means living within the carrying or regenerative capacity of the global environment, it would require only one planet earth by 2050 to satisfy global demands for natural resources (Hengeveld, 2012). In other words, the carrying capacity of planet earth is currently at its "maximum human load", meaning that a threshold beyond permanent damage is inevitable (Rees and Wackernagel, 1996).

However, commentators continue to disagree on how or when the threshold of "maximum human load" on planet earth would be reached as typified in their variations projected for the

world population (9-10.7 billion people) by 2050 (UN, 1998, Newman, 2011; and Frankland et al. 2014). Indeed, UN-Habitat (2011) has indicated that the increase in global population and per-capita income have favoured increases in greenhouse gases mainly responsible for climate change. However, most experts hold the view that it is unlikely that the planet can accommodate an urbanized humanity which routinely draws resources from ever more distant hinterlands, or routinely uses the biosphere, the oceans and the atmosphere as a sink for its wastes (Girardet, 1999).

## 1.2 Cities - A Scale for Studying Global Environmental Impacts

Following the fact that sustainability has become a global concern, the urban level has become a popular scale of study, because the main sources of threats to global environment originate from cities and urban communities (Eden, 2000). Cities are the frontline consumers and beneficiaries of huge amounts of environmental goods and services usually imported from beyond their boundaries, and at the same time emitting effluents such as carbon dioxide (CO2) and other greenhouse gases which has had and continue to have trans boundary implications (Boydel, 2004). Furthermore, relying on the estimate suggested by Rees and Wackernagel (1996) the ecological footprints of residents of Vancouver and the Lower Fraser Basin, recorded ecological footprint that clearly overshoot factors of 178 and 13 respectively. Interestingly, a similar study of other cities have also revealed significant overshoots of inhabitants' ecological footprints (Folke, et al. 1994; IIED, 1995) which therefore confirms that ecological footprints of cities transcend their immediate boundaries by staggering distances (Rees, 1992).

Studies have shown that an average European City of one million inhabitants will import 11,500 tonnes of fossil fuel and 320,000 tons of drinking water on a daily basis while in return, it will export 25,000 tons of carbon dioxide, 300,000 tons of waste water, and 1,600 tons of solid waste into the atmosphere (UN-Habitat, 2011). These numbers on the one hand highlight the linkages between urban functions and lifestyles, and on the other, the pressures cities tend to impose on natural environments beyond their boundaries. While urban areas disproportionately account for the factors responsible for global environmental degradation, so also is their share of the consequences (UN-Habitat, 2011). Essentially millions of urban residents around the world are projected to experience climate change impacts in various ways such as flooding (UN, 2011). But the built environments are particularly vulnerable considering recent changes in climate and their significance to urban areas, such as rising sea

levels, inland floods, frequent and stronger tropical cyclones) and periods of increased heat and the spread of diseases (IPCC, 2007; Fussel, 2009).

Sequel to the above, the observed changes in global climate, as it is already manifesting, exacerbates the already catastrophic situation of accessing basic urban services, and other urban opportunities thus worsening urban quality of life, and this has arguably made nonsense of the sustainable development concept (Jones, 2009; Oden, 2010). Often times, those expected to bear the brunt of climate change impacts are the urban poor who are predominantly found in slums and informal settlements are manifestations of rapid urbanisation.

It is therefore imperative to note that cities and multiplication of megacities have the potentials to influence the causes of climate change (Trisolini, 2014), and could also have the solutions to advance climate protection (Satterthwaite, 2013). Hence the success of mitigation and adaptation critically depends on the availability of necessary resources, not only financial, but also knowledge, technical capabilities, institutional resources and tools, which cities harbour and incubate including the political will to implement relevant policies. Thus, not only are cities the hub of production, consumption, and waste generations, they inherently possess unrivalled potentials to increase efficiency in natural resource consumption which explains the criticalness of cities, as a scale, for studying the impact and response to climate change (Trisolini, 2014).

### 1.3 Climate Change and Nigerian Cities

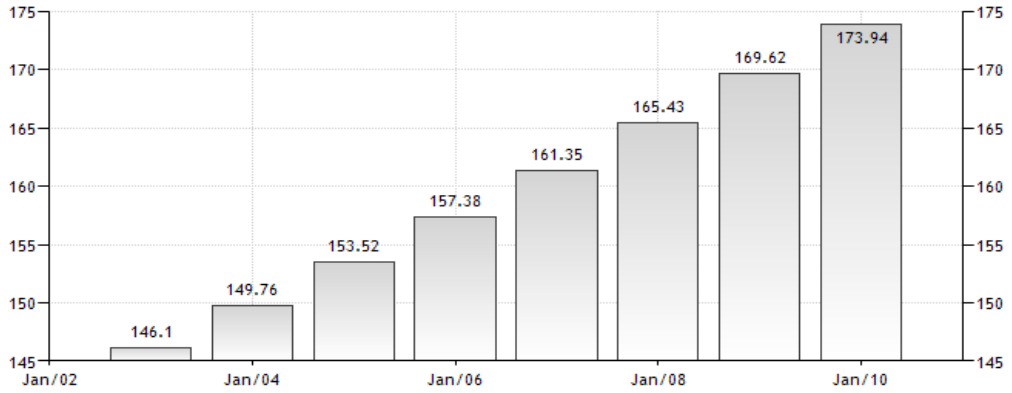
Consistent with some assertions made previously, Nigeria is the most populated country in Africa with July 2015 population estimate by the United Nations Organisation as 182,202,000 broken down to 92,789,000 males and 89,413,000 females (UN-Economic and Social Affairs, 2015). The country shares borders with Niger, Cameroon, Benin Republic and Chad as shown in figure 1.4 that also shows major cities and towns in the country.

**Figure: 1.4** **Nigeria Geographical Maps**


**Source:** http://www.geology.com/world/nigeria-satellite-image.shtml

Global forecast suggest that Nigeria's population would probably top 367 million by 2050 which will be an increase of more than half (UN, 2011). On top of this, Nigeria is also forecast to experience the fastest urban population growth spread across the next 40 years, with an additional 200 million people (UN, 2011; UN-Habitat, 2011). It is argued that such unprecedented urban growth would exacerbate existing problems such as; poor and inadequate infrastructure, food shortages, geometric rise in unemployment figures, inadequate and poor housing, slums, and a deterioration of the urban environment (UN, 2011; UN-Habitat, 2011).

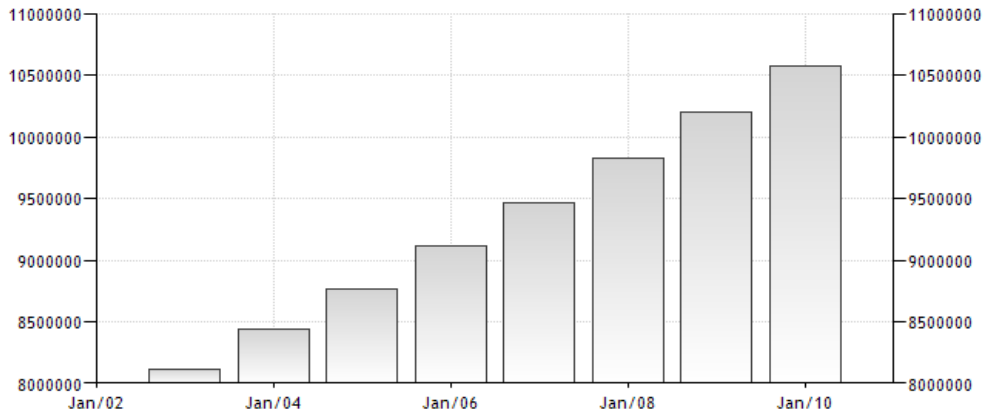
**Figure: 1.5 Population Density People per Square Mile 2002 - 2013**




**Source:** Generated from:www.tradingeconomics.com/**nigeria**/urban-**population-growth**-annual

Furthermore, the effects of Nigeria's population growth rate can be seen in the demographic transition revealed in Figure 1.5, showing that for the same period, the population living in the largest cities increased by 77 per cent. Also Figure 1.6 shows the population density per square mile in Nigeria between 2002 and 2013, indicating a rise of 84 per cent within a decade. The implication of this phenomenon is urban sprawl where cities are rapidly expanding, swallowing adjacent town and villages a typical example of Lagos expanding into Ogun state, in South west Nigeria.

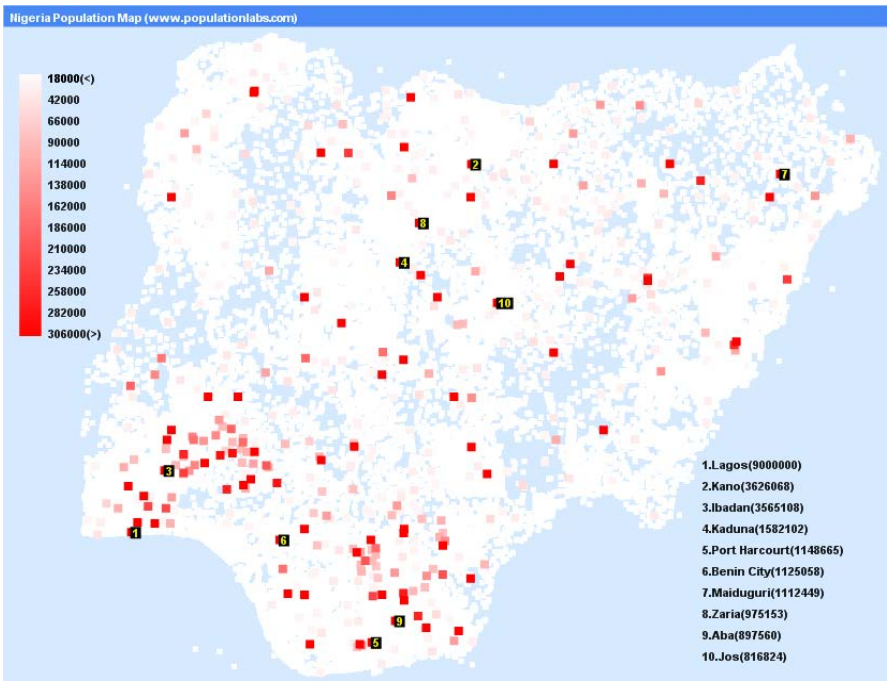
**Figure: 1. 6 Populations Living in Largest Cities 2002 - 2013**




**Source:** www.tradingeconomics.com/**nigeria**/urban-**population-growth**-annual

Currently, Lagos is the only state in Nigeria that has taken practical steps towards developing into a megacity status, with five other cities with more than one million inhabitants. Given the expected 200 million expansions in urban population, the suggestions that the largest cities will disproportionately absorb the huge growth, means the urbanisation of Nigerian cities will continue as currently been observed.

**Figure 1.7** **Nigerian Population Map**




**Source:** http://www.populationlabs.com/Nigeria_Population.asp

Following from the above, it is unarguable that Lagos exemplifies the most notorious example of urban growth in Nigeria, which comes as no surprise given its status as the

commercial nerve centre of the country. The city experienced a phenomenal growth in the 1970s, with an annual growth of 14 percent, which reflected the booming prosperity that accompanied this period. Unfortunately, the government did not focus on a planned structured growth during this period (Aina, et. al. 1994). As a result however, Lagos soon became famous for its congestion, water and electricity shortages, floods, poor telecommunication, and acute problem of solid waste disposal (Aina, et. al. 1994). As Figure 1.7 shows, Lagos became gridlocked, and the huge traffic congestion imposed huge cost burden on businesses despite the construction of new roads and bridges, the quicker they become congested.

**Figure 1.8** **Congested Lagos**

**Source:** www.http/lurgnetwork.file.wordpress.com/crowdslagos1.jp

Therefore, the city soon became overwhelmed, as shown in Figure 1.8. It also clearly demonstrates that Lagos never really seemed to have enough infrastructural facilities to cope with its phenomenal human and economic growth. Underpinned by the inability and lack of

foresight by the government to generate sufficient employment to cope with massive population influx; Lagos started incubating giant slums and other forms of environmental pollution and degradation ( Emordi and Osiki, 2008; Illesanmi, 2010; Aluko, 2012). These slums are particularly vulnerable because of their locations, and mostly coastal communities because of the climate change impacts of rising sea level (Adelekan, 2009). Particularly and indeed sadly too, in 2012, a slum community in Lagos was swept into the sea during the night, completely unaware of rising sea level and no warning, leaving many dead, the total number of which remained unknown till today.

**Figure 1.9 One of the many Refuse Dumps in Lagos**

**Source:** www.http://www.google.co.uk/url?sa=photos%2Fbiggest-landfills&ei=Refuse

Subsequently, Figure 1.9 also depicts other problems such as solid wastes and air pollution in Lagos, but also reflecting the level of poverty as demonstrated and shown in the activities of people scavenging from landfill sites to earn a living. Interestingly, this particular landfill site

showed in Figure 1.9 ranks as one of the seventh largest landfill sites in the world. Aside from this, inequality of access, stagnant upward social mobility including outcome of urban opportunities has marked out Lagos (Ebo, 2006). Thus resulting in a rather pronounced social inequality, which many urban experts have ascribed to deliberate policy of the then Colonial administration where spatial differential and tight urban controls defined the then colonial Lagos (Ebo, 2006).

Agreeing with the above assertion, Oyesiku (2007) pointed out that the 1917 Township Ordinance advanced the segregation of major Nigeria cities along ethnics and colour lines; were European Reservation Areas where meant for the expatriates and Europeans and native areas further subdivided into indigenes and non-indigenes. This practice continued after independence, and its influence in urbanisation patterns of cities are still felt today with city layouts catering for different categories of households defined by income and status. Although, urban environmental problems are not usually easy to categorise, however they can be broadly grouped into two types; those associated with poverty and those associated with economic growth or affluence, and these two coexist in Lagos state as we know it today.

### 1.4 The Birth of Abuja as the New Federal Capital Territory

The endemic physical and environmental challenges faced by Lagos informed the desire by the Federal Military Government led by late General Murtala Muhammed to initiate the search for a potential new Federal Capital which resulted in the promulgation of Decree No 6 of 1976. Consequently, this military decree gave the relevant legal underpinning leading to the birth of Abuja, as the New Federal Capital Territory of Nigeria, and at the same time establishing the Federal Capital Development Authority to facilitate the planning, designing, and development of the new city (FCDA 1979). Sequel to the above, in 1979 a Master Plan suggesting a four phased orderly development of Abuja spread through 25 years was submitted with expected core values (Ikoku, 2004) that;

- The City of Abuja must be equally accessible to Nigerian citizens who want to make Abuja their home.
- That every resident of the Abuja must have and enjoy equal citizenship
- The City must put the issue of environmental conservation at the centre of its construction and development
- That Abuja should demonstrate and reflect at all times the best aesthetic quality

- Also, another core value in the Abuja Master Plan is that every infrastructure in the City must be functional at all times to give the citizenry greater sense of belonging.
- That it should be developed and constructed to represent a hub of regional development
- Finally, the government should create an atmosphere that would engender rapid economic development for the City and its residents.

Instructively and despite available evidence suggesting that the first phase of Abuja has since been completed whilst the second phase is almost completed, many experts are increasingly becoming disillusioned about the implementation of the Master Plan. They mostly argued that little lessons had since been learned from the ugly experience in Lagos that was the former Federal Capital city. Available evidence that validate the arguments submitted by Mallo and Obasanya (2011) further suggests that there are currently acute housing shortages and a rapid growth of satellite towns that clearly lacked basic critical amenities and social infrastructure in Abuja. This is at complete variance from the core values set out in the Abuja Master Plan (Ikoku, 2004). Similarly, there is a geometric increase in the cases of traffic congestion and clear lack of adherence and violation of approved planning and building codes resulting in substandard and unapproved residential buildings which is now a direct reminiscence of Lagos of the 1970s and 1980s.

## 1.5 Motivation for the Study

The motivation for this study is to see Abuja develop into a 21st century city of sustainable communities. The postulation is that not only does sustainable communities' development approach to the design, implementation and management of cities such as Abuja hold huge capacity for prudent resource management; it holds the key to its survival and prosperity (Roseland, 2000). In particular, Abuja is half built, and re-evaluating past developments and reorienting future development towards sustainable communities' development principles is an innovative way of making urban dwellers visualise nature beyond a "mere collection of commodities or place for recreation, but rather the very source of life and well-being" (Wackernagel and Rees 1996).

Therefore, this research suggests that the design and use of the built environment is considered critical to climate change mitigation underpinned by the fact that the intensity of natural resource consumption including cities exemplifies the built environment (UN-Habitat,

2011). Similarly, this view is consistent with that echoed by Van Der Ryn (1996) which stressed that, “environmental crisis is a design crisis”, indicating that design can change behaviours, and tackling and mainstreaming sustainability into communities’ design principles is an effective way of advancing sustainable development and minimising the ecological footprints of cities and the built environment as a whole.

## 1.6 Research Aims and Objectives

### 1.6.1 AIM

The research project is focused on developing a conceptual framework and guidelines based on the application of the principles of Sustainable Community Design for Abuja, Federal Capital Territory of Nigeria; in order for it to develop into a 21st Century City of sustainable communities.

### 1.6.2 OBJECTIVES

- To assess the current state of sustainable activities if any through the Abuja Master Plan implementation in the design, development and management of the various communities within Abuja, the new Federal Capital Territory of Nigeria.
- To establish the likely impact of sustainability principles and practice through designing the various communities in FCT for sustainable development; and the impact on both the environment and the inhabitants of the so designed communities.
- To investigate the current level of application of sustainable community design strategies in the development of FCT by the built environment professionals practicing in the territory.
- To examine existing guidelines and appropriateness of current policies on sustainable design, development and management of Abuja communities.
- To develop and recommend a conceptual framework by which Abuja, FCT can develop sustainably based on the concept of sustainable community design and development.

### 1.6.3 OUTCOME

This research will produce a conceptual framework that would facilitate the Sustainable Design, Development and Management of Abuja: Federal Capital Territory of Nigeria, into a 21st century city of sustainable communities.

## 1.7 Scope of Research and Limitations

The scope of this research is limited to evolving acceptable conceptual framework that will be used to refocus the development of Abuja into a 21st century sustainable city. The research achieves this through the use of sustainable community concepts and principles to develop a conceptual framework that will guide the development of Abuja, the Federal Capital City of Nigeria into a 21st century sustainable modern city. However, this research would have included other Nigerian cities that need immediate attention towards achieving the development of sustainable cities but for lack of funds and limited logistics. Nevertheless, it is expected that the data generated from this study including the findings will be applied in the development of the adjoining satellite towns in FCT and other regional cities proposed for Nigeria while designing the Abuja Master Plan. The research findings can also be used for other Nigerian cities and possibly beyond, particularly considering those with similar socio-political and economic environments.

## 1.8 Research Questions

This research is exploring the need to develop Abuja into a 21st century city of sustainable communities. The research also demonstrates a practical strategy for enhancing the regenerative and carrying capacity of its natural environment. In view of this, the study seeks to answer the following questions:

- Can Abuja be developed into a 21st century city of sustainable communities?
- How can architectural design be used to guide Abuja's development into a 21st century city of sustainable communities?

## 1.9 Contribution to knowledge

The contributions the outcome of this research investigation makes to existing knowledge on Abuja Federal Capital City specifically concerns design, construction and reconstruction of residential buildings to meet 21st century sustainability standards. This will be achieved through the application of the principles of sustainable design at the planning, designing and implementation stages of all projects. Also, the data generated contributes towards existing

information on Nigeria's architecture and intellectual expertise about various global climate change challenges and designing of sustainable residential cities. Other contributions include;

- The development of a conceptual framework that will guide the formulation of relevant policies which will influence the design and development of Abuja into a city of sustainable communities as earlier stated in the aim of this research.
- Also it provides appropriate guidelines to policy makers on how to achieve the development of sustainable communities' in Abuja for it to become a 21st city.
- Contribution to existing literatures about the awareness of sustainable communities' design in urban sustainability and development, especially on Abuja FCT.

### 1.10 Organisation of Chapters

The report is structured into eight chapters; chapter one provides an in-depth background to the research, setting out the aims and objectives; the problem statement, and the motivation for the study. Chapter two identifies and discusses critical literature on sustainability, sustainable development as well as construction and management of sustainable cities in the 21st century. The literature chapter also reviews previous studies and publications on sustainable communities' design, and the rationale for involving the architect in the sustainability debate. Furthermore, chapter three provides the context to the research with a critical focus and analysis of Abuja and its surrounding communities within the geographical parameters of the New Federal Capital Territory of Nigeria. It also highlights some of the reasons for the creation of the Federal Capital City with particular attention on the current state of the city. Chapter four explained the research methodology, specifically discussing epistemological bases of knowledge, the various techniques of data collection and why they have been specifically chosen.

The various data collected from structured and unstructured questionnaires are analysed and presented in chapter five, while the interview conducted amongst the built environment professionals and the analyses therein are discussed in chapter six. The implications of the results were discussed in Chapter 7, where the findings were embedded in some of the key arguments in the literature. The collective analysis, knowledge and insights gained were used in Chapter 8 to develop a conceptual framework to guide Abuja Federal Capital City of Nigeria to becoming a 21st century City of sustainable communities. Chapter 9 draws a

conclusion to the study where also, the limit to the study was acknowledged and suggestions for future works in the study area was advanced.

# Chapter Two

## 2.0 Literature Review

### 2.1 Introduction

Abuja, the Nigeria Federal Capital City came to be in the 1970s. Designated in the centre of the country to signify neutrality and national unity. Another impetus for Abuja came because of Lagos population boom that made the city overcrowded and conditions squalid. As Lagos was already undergoing rapid economic development, the Nigerian regime felt the need to expand the economy towards the inner part of the country, hence decided to move the administrative capital to Abuja, leaving Lagos as the commercial capital of the Nation. The logic used was similar to the way Brazil planned its capital, Brazila. Construction works on Abuja started in the late 1970s but due to economic and political instability, the initial stages of the city were not completed until the late 1980s. Meanwhile, the hurried movement of federal workers to the new city during the period brought about huge population growth without corresponding infrastructural expansion and growth. This has resulted in squatter settlement and towns which has spread rapidly in and outside the city limits; resulting in the continuous demolition exercise being carried out by successive administration in the new city

of Abuja since 2003. This has led to the researcher's quest for the possibility of developing Abuja on a sustainable basis; into a 21st century city of sustainable communities, based on the principle of sustainable community design and development as exemplified by world renowned sustainable cities, with particular reference to Curitiba in Brazil. To this end, a critical literature review is deemed fundamental to any research undertaking. Because it provides an overview of the field of study, clearly showing what has already been done on the specific subject area while at the same time, identifying the key authors and prevailing theories and hypotheses. The chapter draws a comprehensive and broad base source of knowledge and references necessary to underpin gaps and review different opinions that already exist concerning different aspects of the research topic. Above all, it allows the researcher to avoid duplicating the efforts of previous works, hence clearly pointing towards areas where the present study will make new contributions to existing body of knowledge. The chapter is divided into five broad themes; these are the philosophical underpinning to the concept of sustainable development, community development theory, sustainable development and sustainable communities. Other themes covered here are; architecture and sustainable community design and community architecture specifically using Curitiba as a case study.

## 2.2 Philosophical Underpinning to the Concept of Sustainable Development

To get a full grip of the importance and significance of sustainable communities' development, it is vital that the researcher fully establishes the understanding and explores the concept of sustainable development. It is a known fact that sustainable communities' development is a proposed strategy or framework within which sustainable development could be achieved. Though the concept of sustainable development is variously defined (Pretty, 1995). The central point is that, it demonstrates the tenets of 'intergenerational equity', which simply states that development should be configured and implemented in ways where the activities of the present generation must not hinder the ability of future generations from fulfilling their own material needs (WCED, 1987; Batie, 1989). This succinctly means that natural resources should be responsibly used to avoid a potential decrease in the standard of living of future generations. Although this might suggest a near consensus on the global view of sustainable development as a phenomenon, are two different interpretations of sustainability still in existence emerging from the 'resource constrained growth view' and the 'resource maintenance view' of sustainable development (Batie, 1989). Interestingly, these

two perspectives have strong implications on the concept of sustainable communities' development.

### 2.2.1 The Constrained Growth View

In the first place, the 'resource constrained growth view' conceptualises sustainable development in the light of pursuing economic growth but within the limits of the natural environment, which constrains the growth perspective of sustainable development (Batie, 1989). This view suggests that economic growth can be pursued in ways and manners that allow its impact on the natural environment to be managed. Also following from this, (Rees 1992a, 1992b; Johnson, 2000; Arrow, et. al 2004) argued that whether or not natural resource depletion impairs the ability of future generations to fulfil their own needs critically depended on the extent and ease with which man-made capital substitutes for natural capital.

Subsequently and to validate the 'constrained growth view', Neumayer (2007) asserts that the following assumptions must also be relied upon, that natural resources are widely available; natural capital and man-made capital are substitutable; and rate technical change is so rapid that it is possible to increase the productivity of natural capital stock faster than its depletion rate. The implication of this is that capital accumulation is dependent on economic growth and capital investments whilst education and research will compensate for natural resource depletion (Johnson, 2000) to reassure future generation of a higher quality of life. Interestingly, this view is largely shared by most multilateral and unilateral institutions, and in agreements between governments since it conforms to the conventional neo-classical theory of development (Purvis and Grainger, 2004). This is also consistent with notable environmental and inter-generational equity dimensions (Purvis and Grainger, 2004). Underpinned by the above arguments, economic growth is considered inevitable owing to the massive poverty and inequality within and between nations that can only be significantly mitigated through growth that is considered as a necessary pre-requisite to achieving global sustainability (WCED, 1987, Korten, 1992, Dresner, 2002; Purvis and Grainger, 2004).

In conclusion Korten (1992) contradicts the commission's own analysis suggesting that accelerating demands for natural resources occasioned by growth explains global environmental degradation. He asserts in his submission that continued growth, even if pursued with ecological considerations, often overlooks many growing evidence which shows huge and insatiable demands for the natural environment as overwhelming thus hinders the regenerative or carrying capacity of the ecosystem (Wackernagel and Rees, 1995;

Ebohon, 1996; Rees, 1996). It can therefore be argued that the ‘constrained growth approach’ can be deemed as the equivalent of equating sustainable development with sustainable growth, and this is considered contradictory and misleading (Daly and Cobb, 1989; Lele, 1991). According to Lele (1991);

> "When development is taken to be synonymous with growth in material consumption - which it often is; even today - SD (sustainable development) would be 'sustaining the growth in material consumption' (presumably indefinitely). But such an idea contradicts the now general recognition that "ultimate limits" [to usable resources] exist. At best, it could be argued that growth in per capita consumption of certain basic goods is necessary in certain regions of the world in the short term. To use 'sustainable development' synonymously with 'sustain[ing] growth performance' (Idachaba, 1987)... is therefore a misleading usage of the term, or at best a short-term and localized notion that goes against the long-term global perspective of SD".

This simply means that, the ‘constrained growth view’ of sustainable development is seen as no more than a smokescreen for conventional growth models that pay little attention to the adverse ecological consequences of the ecosystem (Worster, 1995). In other words, the postulation of the ‘resource maintenance view’ which holds that the earth should be maintained and undisturbed because there is no substitute to the planet is therefore valid.

### 2.2.2 The Resource Maintenance View

The ‘resource maintenance’ model to sustainable development emphasises on some critical internal values inherent in the natural environment and across life forms therefore, the protection of the natural environment should determine the overriding priority over the pursuit of economic growth (Naess, 1995; Wackernagel and Gallil, 2012). The function of natural capital underscores its significance to development, which includes the provision of food and raw materials such as fossil fuel and wood timber for the construction industry (Dietz and Neumayer, 2007). It also acts as sink for waste from production and consumption; providing amenities, above all, performing the basic life-support functions upon which humanity and other forms of life critically depend on (Dietz and Neumayer, 2007).

Furthermore, (Daly and Cobb, 1989; Naess, 1995) argued that, natural capital is not substitutable, hence can only be tempered with to fulfil “vital needs”, as opposed to “lethal desires”. They further stressed that the overall degradation witnessed across the global

environment within the last century had very little to do with the fulfilment of basic needs, rather, it was mainly informed by the insatiable demands exerted on the ecosystem because of the need to satisfy and enhance affluent lifestyles of a very few people (Daly and Cobb, 1989). Therefore, a proactive change in attitude that encouraged capital accumulation is the best and most effective way of sustaining and enhancing the regenerative or carrying capacity of the eco-system (Naess, 1995).

At the heart of the difference between the 'constrained' and 'maintenance' views of the natural environment and the concept of sustainable development is whether or not planet earth or natural capital is easily substituted by man-made capital which reflects the "weak" and "strong" sustainability debates (Daly and cobb, 1989; Haughton and Hunter, 1994; Neumayer, 2003). Arguably, where man-made and natural capitals are easily substitutable, man-made capital should compensate for natural resource depletion, in other words economic growth may not be at variance with sustainable development, particularly as it may concern the environment and bearing inter-generational equity in mind (Pearce and Atkinson, 1993).

The "strong sustainability" approach opposes the notion of perfect substitution between man-made and natural capitals; rather, they are considered complimentary (Daly and Cobb, 1989; Rees, 1998; Roseland, 1998). This is informed by the notion that certain environmental functions cannot be duplicated by manufactured capital; therefore, it is argued that existing stock of natural capital must be maintained and enhanced (Naess, 1989). Indeed, Victor et al. (1994) and Cabeza-Gutés (1996) posited that the main implication of 'weak sustainability' approach to sustainable development is the fact that the natural environment is dispensable.

Due to these controversial and divergent perspectives on sustainable development, there exists some few suggestions that points to the past and stressed that there may be a considerable possibilities of substitution between some functions of natural capital and man-made capital (Neumayer, 2002). Also, there might be substitution between some natural waste assimilative capacity and some natural amenity services (Dietz and Neumayer, 2007). However, as cited in (Barbier, et, al. 1994) also opined by (Dietz and Neumayer, 2007) indicated that the basic life support function of natural capital is "the global environmental and ecological system that provides the basic functions of food, water, clean air and friendly climate" which is difficult to substitute.

However, finding common grounds between these two competing perspectives on sustainable development, that Neumayer (2003) believe cannot be falsified, is the fundamental element that defines the important of sustainable community development. This is because it determines whether or not an action should be taken and the nature of the action to be taken to achieve sustainable development.

### 2.3 Community Development Theory

According to James Cook (1985, 1994), though many people have made careers out of best ways to stimulate development of communities throughout generations as aptly suggested by both Wackernagel and GalliI (2012) of the resource maintenance view and Batie (1989) in his resource constrained growth views. None of these approaches have effectively been identified and concluded as representing "Community Development" (Cook, 1985, 1994). Thus it becomes quite a herculean task to identify which theory is best applicable and appropriately defines the concept of designing Abuja Federal Capital Territory of Nigeria into sustainable communities.

A key reason for this is because community development practice and professionals preceded the development of relevant theories in the field; in fact, Christenson and Robinson (1980 as cited in Cook, 1985, 1994) believe that divergent principles and elements of theory have their roots in the experiences of community development practitioners. Therefore, it becomes near impossible for community development practitioners to want to accept well-articulated propositions as a paradigm to guide its practice which has often resulted in practitioners' impatience towards community development theory that they see as irrelevant (Cook, 1985, 1994). Despite these gross animosities towards community development theory however; Cook (1985, 1994) opined that theoretical assertions have always been at the heart of practice-oriented community development because, the most vigorous detractors of theory were moved into practice by some elements of normative theory.

A standard or general community development theory asserts that, "people have the right to participate in decisions that have an effect on their well-being" (Littrell, 1976 as cited in Cook, 1985) which is arguably the crux in the concept of sustainable development that advocates allowing people to be actively involved in what affects their present and future. Underpinned by the above facts therefore, community development theory can be explained from three sub-themes; these are: systems framework, holistic approach and integrated designs (Cook, 1985). Accordingly, systems framework within the context of community

development theory explains that, the processes leading to practical suggestions for behaviour supporting community improvement are quite complex, imperfect and continuous (Cook, 1985). Therefore, since community development theory basically regards communities as systems and sub-systems, it strategically and wholly depends on social systems' conceptual frameworks to organize and communicate ideas, intelligence and data discovered or created whilst engaging with the environment (Pinkerton, et al., 2010). Community development theory effectively communicates through description, predictions and explanations (Purcell and Beck, 2013), and according to Cook (1985) systems framework has compatibility advantage with holistic approach.

Secondly, holistic approach is also used to describe community development theory because each individual theory used to explain this phenomenon is viewed from the context of the whole (Cook, 1985). Cook further argued that the initial step is to develop a general or whole concept of a community, despite the fact that it might be incomplete, but the idea of developing or conceptualising a general view of a community demonstrates that a seemingly possible proposition of a whole is achievable (Cook, 1985). Thus a community such as Abuja Federal capital territory and its movement can be widely comprehended before acquiring knowledge of the city and functions of its constituent parts like its culture (Cook, 1985). Therefore, the concept of the whole or holistic approach clearly serves as a precursor whilst divergent theories are applied to individual parts to link them with the whole (Haughton, 2013). The holistic approach represents a deliberate move that places functional relationships as parts of the whole and stresses that, one aspect of the system represents the centre nerve upon which every other aspect depends (Haughton, 2013). In a nutshell, community development theory argues that there is no one most important sector whilst talking about sustainable communities' development designs rather all aspects and elements must be considered which is consistent with Stanton-Geddes et al., (2013) interdependencies in the human ecosystem in Figure 2.1.

Another integral aspect of community development theory is the integrated model design that works closely with the holistic approach to provide the platform upon which interdependence and relationships between divergent situations are viewed and subsequently established in a community development design (Cook, 1985). Suggesting therefore that, where communities are likened to systems then their activities and designs should be interlinked which also agrees with Broadbent (2003) and Butler, et al., (2012) who postulated that, the integration

chain design should begin at the individual, family and up to the community levels. Consequently, it applies that the Abuja Federal Capital territory sustainable communities' design framework should be all-inclusive to clearly reflect the place of individuals, families and their interrelatedness and roles in the evolution of a sustainable environment and community. Thus, integrated model triggers the capacities within the system to determine what kind of integration that would best fit into divergent circumstances, either centralized or a decentralized control patterns. Its delivery-capacities are wholly underpinned by the ability of the system to effectively coordinate the sub-parts (Cook, 1985).

Furthermore, many commentators are quite critical in attempts to describe any intervention in community affairs as community development (Butterfoss, 2007; Flint, 2013) and it is unarguable that, since most communities' assets are inherently different, many communities will not follow the same developmental trajectory (Eversole, 2015; Flint, 2013). However, in an attempt to outline common trends and character in community development, Cook (1985) identified a set of characteristics that would normally differentiate community development from other forms of community related activities like;

- The need to focus on a unit called "community." This allows the residents of a particular community to concentrate on areas of common interest to direct and influence their immediate community development roadmap. This type of community development is often seen as allowing common elements in the community to closely link the developmental strides of the community led by the residents who are the immediate stakeholders.
- Secondly, Cook (1985) argued that another element that would normally differentiate community development from other related community activities are found in many conscious attempts to introduce irreversible structural changes. The idea of the change being irreversible is not always made explicit. However, it is generally understood that once structural changes takes place in a community system it is intended for that system not to return to its original configuration.
- Also, communities might often employ and use paid services of professionals/workers to achieve a pre-set transformational regime intended to redefine how the physical environment looks in order to give resident a new sense of belonging which is clearly at variance with other forms of development led by external agencies or government.

- Furthermore, other forms of community development could take the shape of project initiatives that are initiated by external groups, agencies or institutions. This happens when the need arises to create a uniformed pattern of development across communities for the overall benefits of the larger environment like the concept of sustainable community development as suggested by the United Nations Agenda 21 (1992; 1997).
- The above type of community development would normally emphasise the need to proactively involve the public for all-inclusive participation which creates a larger sense of collective ownership and hence encourage the public to drive the process as well as protecting it.
- The public or those residing in the communities are encouraged to participate in various community related projects and programs for the purpose of self-help. This is a form of community activity that sees stakeholders heavily involved in the discussions, designs and executions of projects.
- Another form of community activity is an increased dependence on participatory democracy as the mode for community (public) decision-making. Thereby allowing residents to take part in organised public hearings so that their opinions can be gauged against any such decision that has to be with either internal or external developmental initiates.
- Finally, Cook (1985) stressed that it is important to adopt a holistic approach in undertaking any community development initiative. This would normally involve many of what have been mentioned above representing bottom-up and stakeholders' driven.

Instructively and consistent with the line of argument presented by Cook (1985) above, many of these elements can be applied, as a precursor, to the Abuja Federal Capital Territory sustainable communities' design framework.

### 2.4 Sustainable Development to Sustainable Communities

It has been observed that sustainable development and sustainable communities are inextricably linked, meaning two sides of the same coin. There are several descriptions of sustainable community concept. In particular, RIBA (2003) describes sustainable community as a relationship between groups of people with a specific community that should demonstrate the capacity to continuously thrive with the environment in a sustained manner.

Also, it should possess an important characteristic of been able to support its diverse needs and meet the desires of its population without necessarily compromising the needs of other communities and upcoming future generations residing within that community (RIBA, 2003).

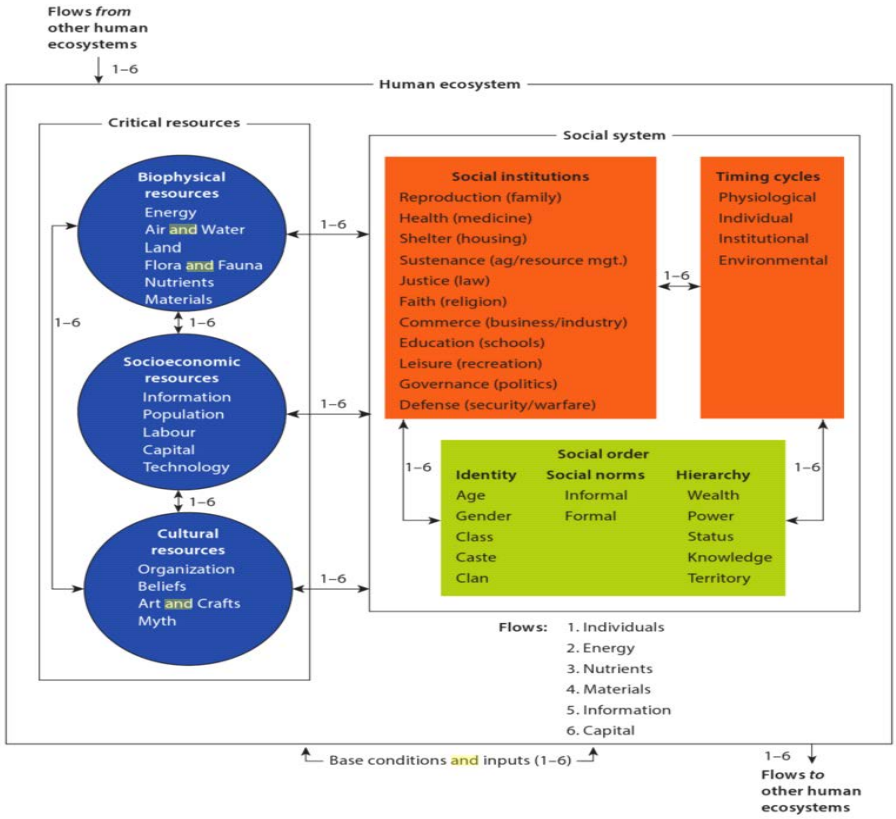
Since this definition underscores and emphasises on needs and desires, it therefore draws a balance between 'strong sustainability' that sees basic needs as the only valuable development goals that is worth driving for the interest of the environment (Haughton and Hunter, 1994). However, it also draws from the weak sustainability argument that submits that both needs and desires should be fulfilled principally within the limits of the carrying capacity of the ecosystem (Victor, et al. 1994; Cabeza-Gutés, 1996). Underpinned by the above, evidences suggest that sustainable communities are places that build on their assets, value healthy ecosystems, use resources efficiently, and actively seek to retain and enhance a locally based economy (RIBA, 2003). Conversely, this is unlike traditional community development framework which only focuses on the disadvantaged neighbourhood sections of any particular community for development, rather sustainable community development emphasises the whole community; ecosystem protection; meaningful and broad-based citizen participation; and economic self-reliance (RIBA, 2003).

Therefore, it could be argued that sustainable community development reflects the ability to make development choices which respects the relationship between the three pillars of sustainability which are; environment, economy, and equity (Ekins et al., 2012). The economy therefore serves as the common good of being self-renewing, and builds on local asset and is also self-reliant (Ekins et al., 2012). In the ecological aspect, humans who are viewed as part of nature are believed to have some elements of limits, whilst communities are viewed to be responsible for the protection of and building of natural assets and creation of opportunity for a holistic communal participation (Stanton-Geddes et al., 2013). Thus, a sustainable community deploys its resources in an efficient way and manner to meet current needs while ensuring that adequate resources are available for future generations (Brown, 2014).

Additionally, Brown (2014), and Stanton-Geddes et al. (2013) also argued that sustainable communities seek improved public health and maintains a better quality of life for all its residents by limiting waste, preventing pollution, maximising conservation and promoting efficiency, and developing local resources to revitalise the local economy. Above all, to formulate policies and programmes that can build resilient and promote sustainable

community development human ecosystems should be dynamically interwoven within and between one ecosystem and another (Stanton-Geddes et al., 2013) as reflected in Figure 2.1, because it cannot be achieved in isolation from other communities.

**Figure 2.1:** The Interdependence between the Human Ecosystems




**Source:** Stanton-Geddes, et al. (2013).

Sequel to the above, the central link between sustainable community development and sustainable development is further strengthened by looking at the clamour for sustainable community development, which is driven by the practical difficulties of attempting to achieve sustainability on a global scale (Roseland, 2012). Yanarella and Levine (1992), correctly observed that, the attention paid to sustainability at both global and national levels have unfortunately achieved relatively little successes because of the complex changes required to make it successful. Also due to the bilateral and multilateral coordination and cooperation required across divergent international political interest and within countries of diverse socio-economic and political structures whilst considering related environmental problems (Yanarella and Levine, 1992). It is necessary to mention therefore the futility a top-down approach to sustainability would result in when compared to the speed required to arrest and reverse global environmental degradation been observed which was further amplified during

the UNCED's Earth Summit in Rio that resulted in the UN's Agenda 21 (UNCED, 1992). Interestingly, Chapter 28 of the UN Agenda 21 specifically calls for a generic community formulation of local agenda to reflect the broader UN Agenda 21 mandate as rightly captured below:

> "*Each local authority should enter into a dialogue with its citizens, local organizations, and private enterprises and adopt 'a local Agenda 21.' Through consultation and consensus-building, local authorities would learn from citizens and from local, civic, community, business and industrial organizations and acquire the information needed for formulating the best strategies*." (UNCED, 1997).

It is instructive therefore that the relevance of generic community approach towards attaining sustainable community to sustainable development is aptly underscored by the key fact that, it is not only at the community levels that people encounter the environment, but that sustainable development transcends the natural environment (Chansomsak and Vale, 2009). The approach encompasses many essential variables that define sustainable development such as equity and governance (Chansomsak and Vale, 2009). Thus, inspiring commentator like Baton (2000) to posit that addressing sustainability from the local level throws up changes that matters more to people. That it also creates the opportunity for people at the local levels to effectively address their challenges whilst encouraging fuller participation from many of them who have more robust knowledge of their natural environment. This is further alluded to by Yanarella and Levine (1992); who opined that communities constitute the level of social organization, where the impacts of environmental degradation are mostly felt, and where interventions are most likely to be quicker, successful, and more noticeable. This view is re-echoed in Chansomsak and Vale's (2009) description of sustainable community development as simply signifying necessary changes that drive a community towards sustainability.

Communities as social organisations are not only effective and enabling environment underpinning sustainable development, but rather, they also enhance the functionality of sustainable community development functions (Yanarella and Levine, 1992). These functions ultimately serve as vehicles for delivering sustainable development on a larger scale (Yanarella and Levine, 1992). One reason for this is that, sustainable community

development becomes a process that could be replicated elsewhere through the concept of sustainable development (Yanarella and Levine, 1992).

Also related to the above, sustainable communities offer huge flexibility, both in strategies and policies that are necessary in driving sustainable development concept forward. This allows the application of relevant strategies and solutions that could remedy identified environmental problems. This function is significant when considering environmental problems. These problems can be national-specific, as observed in the diversity found within and between communities' environment related problems, natural and human resource endowments, levels of economic and social development including climatic conditions. In view of such structural differences, it can be argued that, a standardized approach to sustainable development is likely to produce mixed results (Porter, 2000; Malchow, et al. 2001). This signifies the importance of the community- based approach, as suggested in the UN Agenda 21 Agreement, towards sustainable development that basically allows local constraints and opportunities to be reflected in sustainability policies.

In other words, it is right to argue that sustainable development and sustainable communities' development are intertwined, with the only observed difference seen in the local ethos of sustainable community development (Yanarella and Levine, 1992). This fact is further grounded by Gibbs (1994) argument that explained the symbiotic relationship between sustainable development and sustainable community development as:

> "Environmentally sustainable urban economic development can be defined as local economic change which contributes to global environmental sustainability, while also enhancing the local natural and constructed urban environment. Sustainable development favours increased local control over development decisions, and such `bottom up' development strategies would require devolution of decision-making authority to the local level. . ."

Underpinned by the above interdependent relationship, the 'strong sustainability' perspective of sustainability has serious implications for urban form, given the emphasis on the preservation of the regenerative capacity of all ecological systems and the need to afford the eco-system the time and space to re-establish its stability, diversity, and resilience (Muttagi, et al., 1998). Thus, a strongly sustainable human society exists and develops as an integral

part of ecosystems (Rees, 1990a, 1990b). The ecosystems also displays a high ecological integrity, thereby underscoring the importance of efficient use of urban spaces, reduced consumption intensity of environmental resources, and enhance administrative and planning capacities (Rees, 1990a, 1990b). However, reflects attendant socioeconomic and ecological difficulties in policies and strategies, but generally aligns with natural resource use with the assimilative capacity of the ecosystem (Rees, 1990a, 1990b). Thus, Van der Ryn and Calthorpe (1986; Rees and Roseland, 1991) elucidated that approaching sustainable development through sustainable communities' development plan facilitates the decentralisation and localisation of economic activities, and also retains the use of local social surplus to enhance community resilience.

Therefore, in accordance with the UNEP (1990; UNDP, 2010) publications, the hallmark of sustainable communities' development is found in the balance emphasised between environmental concerns and development objectives that enhance local social relationships. Sustainable communities do not only protect the natural environment but they certainly promote increased humane and balanced local societies (UNDP, 2010). This generic local level approaches; especially the local control of relevant developmental decisions can be seen as the primary means of achieving sustainable communities' development (Yanarella and Levine, 1992).

On the contrary however, though the role and significance of sustainable communities' development in the delivery of sustainable development is not in doubt, there are serious concerns raised about the capacity of many communities to effectively organise themselves socially and cohesively for a sustained time frame (Tilly, 1973; Luloff, 1990; Wilkinson, 1991). Prompting observers to note that, despite many recorded actions by communities', there are occasions when conflict destabilizes them (Tilly, 1973; Luloff, 1990; Wilkinson, 1991). Another commentator agreed with this point stressing that, even in active communities, problems of competing objectives and coordination pose huge threats to sustainable community development initiatives (Bridger, 1992). In addition, Molotch, (1976) and Logan and Molotch, (1987) discovered that economic elites predominate the leadership and participation in communities' activities, hence putting profit as motivation instead of public service.

Many other challenges observed to be facing sustainable community development initiatives include; enduring problems and characteristics of most conventional community development plans, which Warren (1972) has rightly described as 'vertical ties'. This happens when local communities lose their autonomy normally informed by increased ties and contacts with organisations and institutions external to the communities, especially for employment and income. Consequently, decisions directly affecting such communities tend to be made outside it hence often lacking in local peculiarities (Warren, 1972). This has been noted to be particularly true of communities endowed with natural resource (Courtney and Luloff, 2005). This behaviour often truncates communities' drive towards the attainment of sustainable development initiatives as suggested by the United Nations Agenda 21 (UNCED, 1997).

Clearly therefore, increased vertical ties normally manifest two types of consequences, as postulated by Warren (1972), Berry (1993) and Sachs (1995), who stressed that vertical ties wrongly exposes local communities and their economies becomes increasingly intertwined with the global economic system. Experience shows that such exposures leads to extreme capital mobility where "places are used as mere production sites", and when a particular place turns unprofitable, "corporate decision-makers simply transfer operations elsewhere" (Warren, 1972; Sachs, 1995). This behaviour amplifies the obvious threat to community cohesion, and due to such dependency, vulnerability becomes real for instance, the UK mining communities in the 1980s and 1990s which saw individuals, families, and communities pitched against one another (Tallon, 2013).

Secondly, another consequence of increased 'vertical ties' was that the importance of the community, as a social unit, diminishes because "collective sentiments and personal attachment to locality" was completely weakened (Cuba and Hummon, 1993). Also, information and technological revolution in recent past has further exacerbated this problem due to the fact that the world has been reduced into a global village which diminishes the importance previously attached to relationships built from location proximity (Meyrowitz, 1986; Harvey, 1997).

Contemporary local communities may differ from what they were in the distant past, Wilkinson, (1991) argued that not only do people live and interact together in communities; by and large they are involved in, *"place and place-based relationships is still an important feature of human existence"*. Further, Wilkinson (1991) postulated that contemporary communities, unlike their conventional counterparts, tend to exhibit regional characteristics.

This results in the loss of autonomy that has implications on sustainable community development because the prospects for locally controlled and planned sustainable community development lay on the presence of viable communities. Wilkinson (1991) therefore concluded that, it is doubtful that communities that are net contributors to global sustainability can be created in the near future. This is essentially so because, community development defined in terms of social interaction no longer makes valid argument as facilitating sustainable development (Wilkinson, 1991).

In spite of threats to communities' development identified Sampson (1988) and Cuba et. al., (1993) argued that little evidence exists to suggest that the significance of community, as an interactional phenomenon has diminished to a questionable level as a leverage for sustainable development. This is evident in the resurgent interests in local approaches to sustainable development (UNEP, 1990). Similarly, the numerous calls and efforts by planners and architects to develop design principles that integrate the social, economic, and ecological aspects of a region into a balanced and holistic entity are underpinned by the view that sustainable community development adopts a holistic view of the community (Chansomsak and Vale, 2009). This is consistent with Cook's (1985) assertions in session 2.3. Sustainable community development practitioners define 'New Urbanism', as dealing with the construction of physical scaled neighbourhoods and communities characterised by mixed land uses that encourages alternative forms of transportation such as; mass transit, walk ways and variety of housing typologies to meet varying needs of a diverse population (Porter, 2000; Hausen, 2013). This is consistent with the description of the integrative model of community development theory (Cook, 1985). Overall the preservation of uncultivated land and open spaces, and the construction of public spaces is a central feature of community life (Calthorpe, 1993; Duany and Plater-Zyberk, 1994).

Following the role of built environment professionals, particularly the architects, in enhancing community development through design is taken from Calthorpe's (1994) argument that:

> "Understanding the qualities of nature in each place, expressing it in the design of communities, integrating it within our towns and respecting its balance are critical to making the human place sustainable and spiritually nourishing" (Calthorpe, 1994).

Indeed, this assertion clearly resonates with the view that architects *"can make or unmake a community"* (Lennertz, 1991; Duany and Plater-Zyberk, 1994). Furthermore, Lennertz (1991) explains that architectural designs affect human behaviour whilst Duany and Plater-Zyberk (1994) consider the structure and function of a community as interdependent as rightly postulated by Haughton (2013) in session 2.3. Therefore Duany and Plater-Zyberk (1994) noted that design is a sophisticated tool that can structure functional relationships, whilst also stressing that designers' decisions permeate the lives of residents not just visually but in the way residents conduct their lives. Thus, it is clearly unarguable that architects have fundamental roles to play in creating sustainable communities that drives sustainable development.

### 2.5. Architecture and Sustainable Communities Design

Architects and the Architecture discipline plays quite a significant role in facilitating sustainable community designs because of the fact that, the built environment constitutes the physical element and therefore represents a significant part of every community. To further buttress this view the Scottish Executive reiterated that (Scottish Executive, 2005):

> "*poor design impoverishes the built environment, adversely affecting the quality of life for residents, denying sense of place, and precipitating loss of identity and the fragmentation of communities. The long-term consequences of poorly designed development are inherently unsustainable. In contrast, good design represents an investment in Scotland's people and places, and adds value to the built environment*".

They also stressed that architecture as a discipline and architects play a major role in the making of sustainable communities, but do not reflect the views of many who argue that, their built environment does not meet their basic requirements. Postulating further that the need for a decent home, access to critical social infrastructure, local amenities and open spaces including pleasant and stimulating places to work in, opportunities for leisure and fresh air make it more germane. Thus, it is asserted that the ability to meet these needs, and realise the social objectives of an inclusive society that provides opportunity for all is put down to the quality of the built environments that architects create (Scottish Executive, 2011).

Therefore, good architecture delivers good building designs and upholds social values by bringing coherence and order to the built environment for larger benefit of the community. Hence, the Scottish Executive posit that:

> *"Architecture is, then, too important to be marginalised as a matter for debate and policy. If we are to meet our social, cultural, environmental and economic objectives, if we are to confirm Scotland status as a decent place to live and work and a worthwhile place to visit, then we need to have greater regard for the quality of our architecture and our built environments."*

The centrality of architects to sustainable community development is further underscored by looking at some of the practicable definitions of sustainable community presented in Table 2.1 by Peck, et al. (2000; Peck and Tomalty, 2002; Egan, 2004; RIBA, 2004). Accordingly, it is clear from Table 2.1 that, Peck, et. al. (2000) has identified twelve main elements and characteristics of sustainable community development. Some of these features and characteristics are equally identified in Stanton-Geddes, et al. (2013) in figure 2.1 showing the elements of interdependence in the human ecosystem.

**Table 2.1**

**Features and Characteristics of Sustainable Communities**

| **Peck and Tomalty (2002)** | **Egan (2003)** | **RIBA (2004)** |
|---|---|---|
| • Ecological Protection<br>• Density and Urban Design<br>• Urban Infill | • Flourishing local economy to provide jobs and change;<br>• Strong leadership | RIBA accepts all the sustainable communities' attributes enumerated by Egan (2004) but added a further seven attributes: |

- Village Centres
- Local Economy
- Sustainable Transport
- Affordable Housing
- Liveable Community
- Sewage and Storm Water
- Water Conservation
- Energy Efficiency
- Reduce, reuse and Recycle

to respond to change;

- Effective engagement and participation by local people, groups and businesses, especially in the planning, design and long term stewardship of their community, and an active voluntary and community sector;
- A safe and healthy local environment with well-designed local and green spaces;
- Sufficient size, scale and density, and the right layout to support basic amenities in the neighbourhood and minimise use of resources (including land);
- Good public transport and other public infrastructure both within community and linking it to urban, rural, and regional centres;
- Buildings – both individually and collectively – that can meet different needs over time, and that minimise the use of resources;
- A well-integrated mix of decent

- Well designed, high quality and robust buildings and facilities that respond to local requirement;
- The need to use local resources and skills both in the delivery and during the life of the community, including food production and distribution;
- Integrated and balanced vehicle management;
- Further environmental targets including, extensive use of de-centralised and renewable energy generation and an increase in bio-diversity;
- Good and on-going management and maintenance
- Support for innovation and experiment

homes of different types and tenures to support a range of household sizes, ages and incomes;

- Good quality local public services, including education and training opportunities, health care and community facilities, especially for leisure;
- A diverse, vibrant and creative local culture, encouraging pride in the community and cohesion within it;
- A sense of place;
- The right links with the wider regional, national and international community;

**Source:** Compiled from Peck et al., (2002); Egan (2004); RIBA (2004)

The sustainable communities' features and characteristics discussed earlier is a clear demonstration of the fact that architecture and architects have major roles to play in delivering sustainable communities. Instructively, Egan (2004) declared that sustainable communities do not just happen; rather they are outcomes and fruits of cognizant efforts manifesting planning, creativity, professional skills that include tools and policies. However, the sustainable community features and characteristics detailed in Table 2.1 have been grouped into seven components and illustrated in Figure 2.2 (Egan, 2004, RIBA, 2004). Further, a critical look at these components shows that they are within the purview of the architect to deliver. Although more critical is the fact that these components would be difficult to achieve without an enabling built environment design, which is the architects forte. A further outline of established components of sustainable communities (Egan, 2004; RIBA, 2004) is shown in Figure 2.2.

Surprisingly, the popularly held view is that for sustainable communities' development to function, it must deliver on the seven components given to it such as; provision of quality life that incorporates social equality for the long term, and bearing the interest of future generations in mind. However, it is stressed that despite the abilities of the architects, it will take the active participation of local communities to bring it to fruition – in other words, architects must work with local communities to deliver sustainable communities (Brady, 2011), thereby giving rise to the concept of community architecture.

**Figure 2.2 Components of Sustainable Community Development**


**1.** Governance; Effective and inclusive participation, representation and leadership.
**2.** Transport and connectivity.
**3.** Good transport services and communication linking people to jobs, schools, health and other services.
**4.** A full range of appropriate, accessible, public, private, community and voluntary services.
**5.** Environmental; Providing places to live in an environmentally-friendly way.
**6.** A flourishing and diverse local economy Housing and the built environment; A quality built and natural environment.
**7.** Social and cultural; Vibrant, harmonious and inclusive communities.

**Source:** RIBA (2004)

## 2.6 Community Architecture

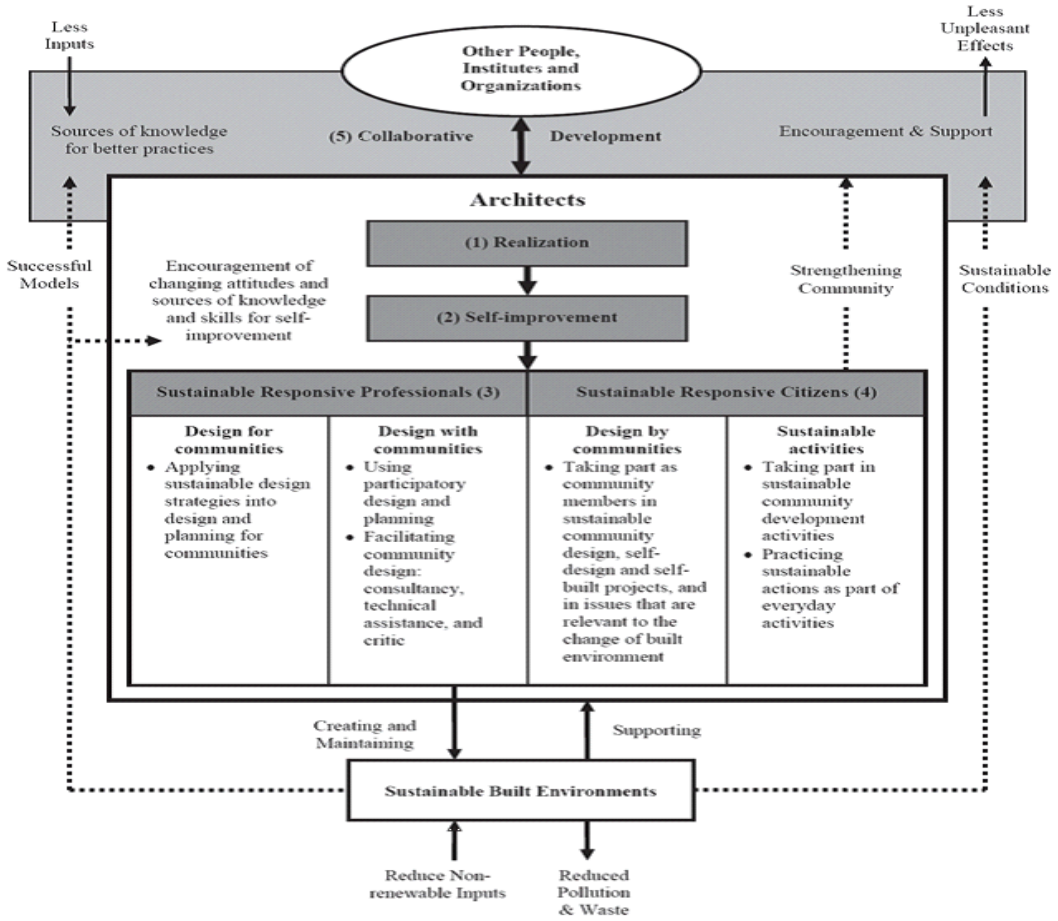
Sustainable community development has its origin in community architecture (Hamdi, 1991), while the term "Community Architecture" came into architectural vocabulary in the 1960s, it became more pronounced in the 1970s by the architectural critic - Charles Knevitt. Succinctly put, it describes the extent to which the community actively participate in the planning, designing and delivery of critical infrastructure and services to their communities despite individual differences (Hamid, 1997). In the views of Habraken (1976) however, participation only comes in various forms and types. On the one hand, participation can either represent assigning certain decisive roles to the users, where they share the decision-making

responsibility with the professionals. Whilst on the other hand, it can take place without the shifting of responsibilities between the users and professionals but instead only the opinion of the user is considered while making decisions (Habraken, 1986). No doubt there are various levels of user participation that include information sharing, consulting, partnerships, controlling, and designing, planning and even building (Wulz, 1990). Hence, the assertion that the involvement of local communities in local decision- making directly affects their lives throughout the stages of the new developments and this is vital to sustainable development. Thus when communities are not involved in designing and planning housing and wider facilities and infrastructure, short-term cost savings may lead to huge correctional expenditure in the long-term were infrastructure and service provisions may turn out to be inappropriate, requiring modifications or total replacement.

As shown in Figure 2.3, Chansomsak and Vale (2009) have designed a framework that depicts the roles of architects as professionals and citizens under five actionable principles. Firstly, they assert that as professionals, architects have the capacity and specialists skills to tailor specific strategies to meet specific requirements of different communities (Chansomsak and Vale, 2009). Unarguably, there is hardly any doubt in the fact that skilled architects prefer to make their designs site specific, because sites are dynamic. This therefore conforms to the views that, in the creation of sustainable communities, it is imperative that architects design “with and for places” (Van der Ryn and Cowan, 1996; Chansomsak and Vale, 2009, Mclennan, 2004).

Sequel to these, the strategic and effective inputs by members of communities in the design and creation of their communities is one of the key requirements of sustainable communities’ development, and thus architects are used to working with other professionals and working in accordance to clients’ briefs. While community participation in the design processes may require a change to conventional architectural practice (RIBA, 2011), it can be argued that, the process can be mutually beneficial to all stakeholders who are engaged in the sustainable community development initiatives.

**Figure 2.3 Relationships of Architects Roles & five Principles for Architects Actions in Sustainable Community Development**




**Source:** Chansomsak and Vale, 2009

Wates and Knevitt (1987) argued that this form of engagement means architects become enablers rather than solving problems. This is further agreed and amplified by RIBA (2011), who suggested that although sustainable community development needs design professionals such as architects, the ultimate design quality of communities created would hinge on the expertise and ability of the architect. In particular, and as demonstrated in the case Curitiba, one of the critical elements underpinning the success of sustainable community development is in engaging local stakeholders at the incipient stage of the design process, this way, local stakeholders are able to take ownership of the design and play prominent roles in the process. Thus, the professional role of the architect in achieving sustainable communities' development is envisaged as a process of "preserving, improving, and creating the required quality of built environment" specific to the needs of the particular community.

## 2.7 Case Study of Curitiba

The purpose of Curitiba as a case study in this research is revealed in Figure 2.12; it is to establish the process and attributes of the world referenced city of sustainable community development, as a theoretical framework underpinning the development of Abuja Federal Capital City of Nigeria into a 21st Century city of sustainable communities. The first reason why the city of Curitiba is being used as case study in this research is because, if there is any demonstrable example in the role of architects in sustainable communities' development, it has to be Curitiba in Brazil. Secondly, Curitiba once experienced similar chaotic structural and traffic problems like those faced today in Abuja. Thirdly, Curitiba is a city in the developing world, and if it can be planned, designed, and managed into a world referenced city, arguably it can be done in other cities of the developing world with the necessary political will. Curitiba grew from a tiny village to become the official capital of Paraná in Brazil which is also quite famous for its waterfalls called, "the Iguaçu Falls". This sustainable community's architecturally developed city (Curitiba City) is situated in Southern Brazil and covers an area of 435 km2 with a population of about 2.5 million inhabitants governed under 25 municipalities (Lundqvist, 2007).

The city has undergone different urbanisation phases. The first phase of its urbanization happened when many people migrated into the City due to its thriving agricultural industries and businesses which tripled its population within a short after which the city faced increased demands for services, particularly housing and transportation (Lundqvist, 2007). In response to this, the city hired the French planner and architect Alfred Agache, who modernised the cities' sewage system and transportation infrastructure to permit better traffic flow (Segawa, 2012). However, as future urbanisation was taken for granted in Agache's plan, urban sprawl became a real possibility, forcing the city to begin planning for new growth, and a team of architects and planners from the Federal University of Paraná headed by Jamie Lerner were engaged (Landry, 2012; Lima, et al., 2014). The plans to minimise urban sprawl, reduce downtown traffic, preserve Curitiba's historic district, and provide easy accessible and affordable public transit were proposed (SEGAWA, 2012; Lima, et al., 2014). The team suggested specified main linear transit arteries to facilitate direct and high-speed routes in and out of the city. These proposals including other elements characterized the Master Plan of Curitiba (Segawa, 2012).

**Figure 2.4** **Brazil's First Pedestrianised Street**

**Source:** *www.**curitiba-brazil**.com/*

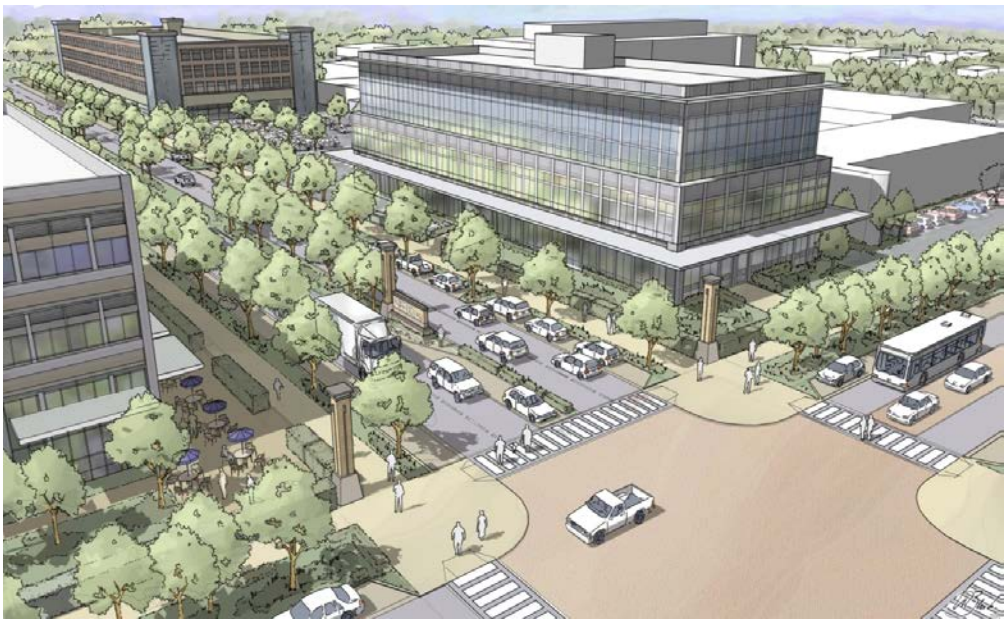
Subsequently, Figure 2.4 shows one of the many outcomes of the Master Plan that became Curitiba and Brazil's first pedestrian street created in Rua Quinze do Novembro, which is the commercial heart of Curitiba (Box, 2007). This was the beginning of Curitiba's visionary integrated public transport orientation and mixed-use city where car dependency was less emphasised, rather emphasis is placed on walking and cycling (Box, 2007). Figure 2.5 also captured the envisaged quality of the environment which shows Pedestrianised streets whilst also showing the preservation of the cultural heritage of the city.

**Figure 2.5 Curitiba as a City of People and No Cars**


**Source:** *www.**curitiba-brazil**.com/*

The originality of the new approach towards creating sustainable communities in Curitiba was the use of transportation strategy to drive socio-economic and physical development, which saw the functionality and integration between the use of land and transport. Thus, from mid-1970s onwards, linear growth along a series of structural axis became the hallmark of Curitiba's design. Each axis is made up of a 'trinary' road system, comprising three parallel routes that are a block apart. As Figure 2.6 shows, the central carriageway of the central road is reserved for a dedicated high-capacity express bus way, and the physical separation from other carriageways allows for a more sophisticated, light railway-based mass transport system in the future if required. The carriageways either side of the bus way are for local access and parking. The two lateral roads (one way or dual carriageway) provide for thorough traffic and access to adjacent development. Express buses running in dedicated routes along structural axes, feeder bus routes to terminals, and inter-district bus routes linking terminals.

**Figure 2.6. Curitiba Urban Layout**



**Source:** http://www.bstn.net/.

During the 1970s, Curitiba began to assume a new shape along with its structural and infrastructural development. Also, the gradual extension of the integrated transport network, development of the road networks and various land use measures aimed at improving and preserving the quality of life in the city gradually turned it into a sustainable community. Instructively, the structural axes formed the first level in a hierarchy of an integrated road system. However, priority links connected traffic to the structural roads, whilst collector streets accommodate various types of local traffic and are lined with local commercial activities. Connector roads link the structural roads to the Industrial City.

**Figure 2.7 Residential Developments along the North East Exit Structural Axis**

**Source:** www.curitiba-brazil.com

Furthermore, all the Master Plan zones used densities throughout the city, although mixed uses are highly encouraged. The floor area (plot) ratio along four of the five structural axes is mainly 6:1 with a ratio of 4:1 along other routes served by public transport system. However, it is observed that the ratio begins to decrease as the land becomes further from the public transport routes. Published statistics suggests that about 17,000 families are housed in high-density areas, and low-income residential developments close to the axis, as shown in Figure 2.7 (Curitiba, 2010a). This efficient level of accessibility made possible by a well-integrated transport system has encouraged development. Also, concentrating such high-density developments along corridors to the axis further re-emphasizes the planned land use approach. Research shows that three structural Axis, were built in Curitiba city in the 1970s and the population grew by 73% between 1970 and 1978, however, the population along these Axis grew at almost 120% (Lima, et al, 2014). Unfortunately, commercial development has not been as promising like was originally anticipated, and this was attributed to the over-estimation of demand for commercial properties close to transportation hub. Arguably, this could have effect on rent charges for commercial properties in the city.

**Figure 2.8. Integrated Transport Systems**

**Source:** [www.curitiba.com](http://www.curitiba.com)

Interestingly however, the demands for commercial developments began to rise and accelerated in the 1980s following the completion of the present system of five structural axis, especially those near transfer points between conventional and express bus systems (Curitiba, 2010a; Curitiba, 2010b). Furthermore, express buses ran on dedicated routes along structural axis while feeder bus routes ran towards the terminals, which are also linked to the inter-district bus routes thereby providing fast cross-city connections and relieving bus traffic on dedicated express routes (Curitiba 2010b). In a nutshell, the urbanisation of Curitiba (URBS) has been in working conjunction with the Research and Planning Institute since 1974 in the areas of; upgrades, extensions, improvements, and further integration of the city's bus network. Interestingly, research also suggested that the later parts of 1970s witnessed the computerization of the traffic control system in the city introduced together with a standard low cost fare throughout the city (the 'social fare') (Sustainable Cities International, 2012). These new social safety net gestures from the government became of immense benefits to the low-income earners who mainly constituted the majority of those who lived in the peripheral areas of the city.

**Figure 2.9** **Rapid Bus and a Boarding Tube**


**Source:** www.curitiba.com

Furthermore, the 'metro' style bus system produced a significant improvement in the areas of efficiency within the city because it contributed in speeding up passenger transfers thereby eliminating the need for a bus conductor to collect fares. It has been argued that a rapid bus system with boarding tubes can carry twice as many passengers per hour and three times as many per hour as a conventional service operating on a normal city street (Curitiba, 2010b). Additionally, the use of the 20% reduction in traffic on the express bus ways as a direct result from the Direct Line network, URBS has therefore successfully introduced the 'surface subway', which is a bi-articulated bus that can carry 270 passengers (Curitiba, 2010b). It is observed that, this bus system is equipped with five lateral doors for passenger transfer on the main north-south Boqueirao structural axis. This system facilitates the movement of up to 22,000 passengers per hour in each direction, amounting to nearly half the capacity of an urban rail system and twice the capacity of an eight lane urban motorway. Therefore, the relevance of this public bus system should be considered with relation to the Abuja Federal Capital Territory sustainability communities' design framework.

The Integrated Transport Network (ITN) system in Curitiba that is a computerized traffic control system was jointly introduced with a standard low cost fare (the 'social fare') throughout the city and it also benefited the low-income earners.

**Figure 2.10. High Capacity Bi-articulated Bus**


**Source:** www.curitiba.com

Furthermore, the most importance element in the RIT's operation is the ease with which it transfers passengers between the various levels of the system. Although a network of local feeder routes served as terminals at the end of the express bus way during the early stage of the ITN operation in Curitiba. The overall number of terminals in the city with associated feeder route has gradually increased over time to a point where the city is now served by fifteen terminals distributed along the express routes with five newer terminals connected by fast routes (Curitiba, 2010b). One key element of the successes recorded in Curitiba's Integrated Transport Network (ITN) is the management approach undertaking through a public-private partnership (Curitiba, 2010b). Further, in 1979 URBS introduced a new network of inter-district bus lines (inter barrios) to link up the terminals, thereby effectively providing a series of cross-city and concentric orbital routes around the city. This network was further improved upon in 1982 along with a new connection between the centre and the Industrial City located in the non-polluting industries area of the city (Curitiba, 2010b).

The set framework reflecting the future plans of the city clearly suggests that there should be a detailed up-to-the minute passenger information services and broader extension of the network to other parts of the metropolitan areas, specifically focusing on local downtown hubs and transfer points. Also, the plan suggests that there is the need to avoid the conventional low demand bus routes (which still carry 20% of the passengers in Curitiba) all together. However, the aspect that is often stressed in the operation of the ITN is the

incremental approach with which it has deployed relatively low-level investment into public transport infrastructure. This is because a metro-based public transport system would have cost the city's administration twenty times as much as a bus-based network (Curitiba, 2010b). Even a street-based light rail system, for example, would cost considerably more than the high capacity bi-articulated bus currently installed on the north-south route. Moreover, the ITN services are operated by private bus companies without public subsidy. Fares go to the municipal bus fund that pays concessionaries according to the number of kilometres their buses cover. Overall, 'Curitibans' spend only 10% of their income on travel, which is a relatively low level for a country like Brazil.

These integrated policies have clearly formed part of a much broader approaches to environmental and social issues adopted by the city over time. Very recently, Curitiba launched a rescue programme for street children, as well as organised open air markets to cater for the informal economy such as street hawking (Curitiba, 2010a, 2010b). The park and green space construction programme has expanded the amount of open space from 0.5 to 52 square metres per capita representing one of the highest rates for any city anywhere else in the world, and further supplemented by the planting of 1.5 million trees (Curitiba, 2010b, and 2010c). The parks and networks of green spaces are protected and maintained by both city employees and volunteers and they incorporate both bike routes and ecological information centres (Curitiba, 2010c).

**Figure 2.11. Parks and Green Spaces in Curitiba**

**Source:** www.guardian.co.uk/environment/2012/june28/green-economics-hope

Consequently, and to enhance access to parks and green spaces, 'retired' buses are painted green and used to provide free transport from the city centres to parks at weekends, and also serve as day care centres or mobile classrooms to provide adult education in low income neighbourhoods (Rabinovitch, 1992). These achievements as observed in how Curitiba has developed and managed its city over time have earned it the global recognition as a model sustainable city in a developing country (Rabinovitch, 1992). Also, the successful integration of urban land use, sustainable transport planning, and high quality of life for its citizens has been globally recognized (Rabinovitch, 1992).

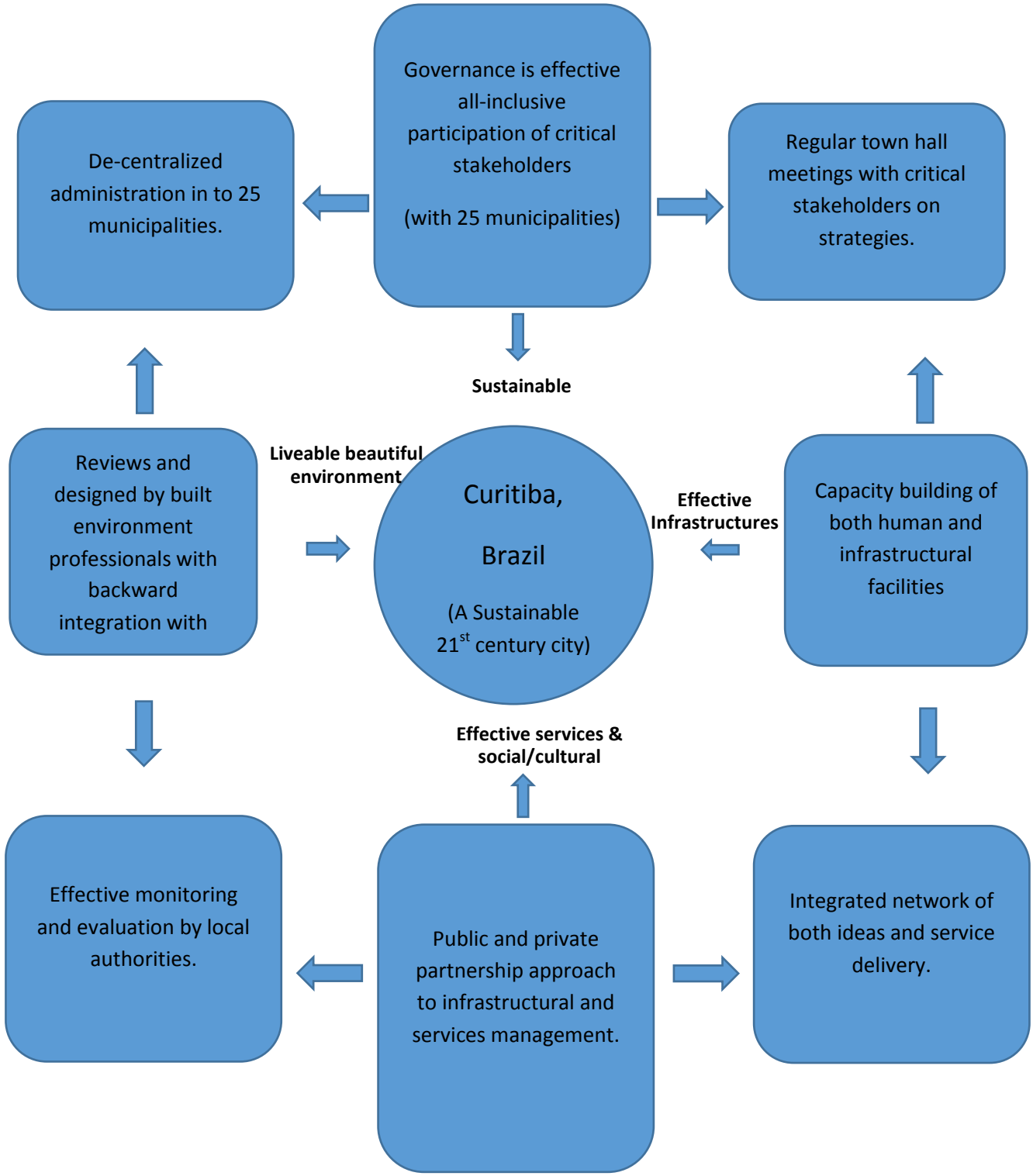
In part, these achievements are viewed clearly as outcomes resulting from high level of institutional leadership; political will, strong networks, and an enabling environment underpinned by effective legal framework (Rabinovitch, 1992; Lundqvist, 2007; Curitiba, 2010a, 2010b, 2010c). The above approach is also required for the proposed Abuja Federal Capital Territory sustainable communities' framework design to be effectively implemented by relevant authorities. It is instructive to note that the overall quality of life of Curitiba's citizens, their transport systems and other related urban infrastructures, including sustainable local community development have all been enhanced. Curitiba city has therefore unarguably demonstrated that development is possible through a sustainable community development

approach (Curitiba, 2010a, 2010b, and 2010c). This is also because, the City's local and international tourist attraction is sustained through the strategic preservation of its cultural heritage and the enhancement quality of life made possible by the green and open spaces which have enriched its biodiversity of flora and fauna (Curitiba, 2010a, 2010b, and 2010c).

Furthermore, innovative social and environmental protection programmers are scattered around the city including the recycling of waste, reuse of resources and poverty reduction strategies are implemented to the last details in the master plan (Rabinovitch, 1992; ICLEI, 2002; Lundqvist, 2007). It is important to note that Curitiba has been able to use a large number of beautiful parks to control floods rather than concrete canals or use of other mechanical means (Rabinovitch, 1992); as sheep usually cut the grass that comes with attendant costs saving and other environmental benefits. Statistics suggest that, Curitiba remains an enviable city to the rest of the world for example; about 75% of the City's population uses public transport, and approximately 70% of the City's waste is recycled (Rabinovitch, 1992; ICLEI, 2002; Lundqvist, 2007). The average income per person has gone from less than the Brazilian average in the 1970's to 66% greater than the Brazilian average, which is as a result of encouraged economic development by reducing the costs of mobility and transportation, trade, and exchange within the city (Lundqvist, 2007). Thus it is not surprising that 99% of the inhabitants are very happy to continue to live in Curitiba while 70% of Sao Paolo's residents relish the thought of living in Curitiba (Rabinovitch, 1992; ICLEI, 2002).

Looking at Figure 2.12, Curitiba is success story therefore, it can be argued that it presents a definitive theoretical framework for sustainable communities' development, which has been applied in Bogota Columbia. This suggests that this approach can enhance the sustainable development of cities and the sustainable development of a country (Lundqvist, 2007). Curitiba's sustainable community experimentation has led many commentators to believe that it is possible for other developing cities to develop sustainable communities and achieve successes as Curitiba has done (Suzuki et al., 2010). Bogota, Colombia has almost successfully emulated Curitiba in the creation of alternative transportation routes, especially walking and bicycle lanes and also managed to unite the poorer and affluent citizens as well as confronted violence in the process (Lundgyist, 2007).

Figure 2.12 Theoretical Framework of Sustainable Community Development Derived From The Curitiba Case Study



## 2.8 Summary

The literature review has demonstrated the importance and need for sustainable community development, above all, the relevance of sustainable community development to urban sustainability in general. Figure 2.12 clearly indicates the potential role of sustainable community development in minimising the ecological footprints of the built environment, which affords and enhances the regenerative capacity of the natural environment.

Many literature shows that engaging end users in the design and construction of their built environment offer several advantages, not least creating sustainable and liveable communities that citizens could claim ownership of whilst sharing in urban governance and avoiding huge future correctional expenditures. The conventional wisdom of blaming project delays on community participation has floundered under overwhelming evidence from projects all over the world pointing to the fact that community participation is vital for project successes. The main reason attributed to this success is that the community knows their environment and problems much better than outsiders irrespective of their expertise. Attaining the inputs of local communities, particularly in helping to decide the nature of projects facilitates a sense of ownership and increases the chances of projects' successes.

Also, success in this sense transcends completion and delivery of projects to also mean the sustainability of projects and the ability of projects to continue beyond technical and financial assistance from donors or the government, which is more likely with strategic communities' backing and participation. Ebohon (1996) argued that this was the understanding of sustainable development before the assimilation of the ecological consequences of uncontrolled growth and development. Literature further revealed that, the critical role of architecture and architects in deploying their skills to design the physical environment encapsulates the enabling milieu for sustainable communities' development. What Curitiba city has become today was then the dream of young architect called Jaime Lerner who headed a multidisciplinary team of architects and planners to deliver what is widely acknowledged to be a shining example of a liveable city.

The question is whether the example of Curitiba can be adapted and used in established urban areas or new settlements to create sustainable communities and enhance environmental, economic, and socio-cultural sustainability attributes? In the case of Curitiba, intensive high-density development has reversed congestions in city centres and suburbs, allowing the

integration of all fragmented urban elements into one whole where the equality of access and outcomes of urban opportunities are guaranteed to all citizens.

Finally, the research provides many literature evidences that suggests the possibility of adopting and adapting the Curitiba model in other developing cities, particularly in other developing countries to arrest unsustainable urban development, growing urban inequality, and the inequitable access to urban amenities. Consequently, the question arising therefore is whether the unsustainable urban form that Abuja Capital City of Nigeria is rapidly developing into can be arrested through sustainable community development? In other words, can the successful examples of Curitiba and Bogota be adapted and replicated in Abuja Federal Capital territory of Nigeria?

These however lead to series of questions such as; what role does urban form play in sustainable community development? How critical is sustainable community development to urban sustainability and development? As well as whether or not the development of a conceptual framework for sustainable community development that will guide architects and other built environment professionals would facilitate the development of Abuja Federal Capital into a sustainable and liveable City? Before discussing appropriate methodologies that will enable the above questions to be answered, it is critical and important to review available details on the current state and functionality of Abuja Capital City of Nigeria. This will enable the researcher determine whether or not Abuja has any sustainability attributes, and particularly sustainable community characteristics which are discussed in Chapter Three.

# CHAPTER 3

## 3.0 Context of Study: Abuja City and the Federal Capital Territory of Nigeria

### 3.1 Introduction

Arising from the literature review, this chapter first presents a critical analysis of the morphology and topography of Abuja including details of the form and patterns of settlements, the processes of their formation and transformation. This is necessary in order to understand the spatial structure and character of the metropolitan area, the city, and the city-towns in order to facilitate close examination of the city's component parts together with the development processes. It would also involve the analysis of physical structures at different scales as well as patterns of movements, land use, and ownership or control. Also, it will drill down on the social forms, as defined by the physical layout of the city and how the physical form impacts or influences various social forms and gauge how they compare with the global indicators for sustainable development and sustainable community development.

### 3.2 Urban Morphology

For a better articulation and contextualisation of Abuja Federal Capital Territory, a brief discussion of urban morphology is discussed generally. Three schools of thoughts have advanced their views and seriously debated about the concept of "urban morphology". Although they viewed this concept from divergent angles, they often arrived at the same conclusions: However, identifying with the Italian, British, and French schools of thoughts would certainly provide the much needed theoretical underpinning for the successful analysis of Abuja Capital City. Sequel to the foregoing, it is important to note that, the Italian school was started by Saverio Muratori in the late 1940s that developed an 'operational history' for the cities studied (Venice and Rome), which then provided the basis for the integration of new architectural works in the syntax of the urban tissue (Moudon, 1994). Mouden asserted that the roots of architecture lie within the more continuous tradition of city building that prevailed from antiquity until the 1930s (Moudon, 1994). Morah (1993) believes that the structure of cities could only be understood historically with building typology as the basis of urban analysis, as it is argued that the built landscape is shaped by political and economic forces which in themselves reflects the prevailing logic, set of elements, and characteristics processes.

On the other hand, the British school of thought, though many believed it is the oldest school of urban morphology, its theories are still being challenged. However, it is believed that its roots come from the works of Otto Schluter who was regarded as the father of urban morphology (Whitehand and Gu, 2007). Though it was the seminal work of Conzen year that instituted urban morphology and underpinned the understanding and management of urban landscapes in the English World such as; morphogenetic method, cartographic representation and terminological precision (Whitehand and Gu, 2007). Instructively, the importance of Conzen's contribution to morphology can be traced to some of his works like "burgage cycle", "urban fringe belts" and "market colonization", which are essential to urban analysis (Conzen, 1978). The study describes the complete method as three pronged approach such as; the town plan, building fabric and the pattern of land and building utilization (Conzen, 1978), analysed the Town plan from three levels:

- Streets and their arrangement into a street-system
- Plots (or lots) and their aggregation into street-blocks
- Buildings, in the form of the block-plans.

According to Conzen (1978), understanding the layering of these aspects and elements through history is the key to comprehending urban forms, therefore demonstrating its relevance in the management of historic and contemporary townscapes. The French School on morphology was most influenced by Jean Castex, Philippe Panerai and Jean De Paule year; but re-amplified by Henri Lefebvre in the late 1960s (Moudon, 1997). According to Moudon (1997), the French school emerged because of what was perceived as the fragrant disregard for historical perspectives and reflected by the modernist architecture (Moudon, 1997). It is interesting to note that amongst these three schools of thoughts, it is the French school that have generated extensive methodological knowledge to aid the analysis of urbanisation processes and related architectural models arguably (Moudon, 1997).

Extensive emphasis is currently been placed on the importance of built space for sustaining social practices; but the relationship between the built landscape and the social world is seen as contentious, because many believe they both shape each other. Curiously, architects and scholars alike perceive the French School as a cut between the Italian and the British schools of morphology, which has tried to address issues of both designs and city-building processes (Moudon, 1994).

Moudon (1997) further argues that three principles underpin morphological analysis which are; form, resolution and time, although they are common to the three schools of thought on morphology, they nevertheless emphasis different theoretical intentions and purposes. Stressing that, these theoretical intentions ranges between descriptive and explanatory purposes as postulated by the British school, the prescriptive purposes celebrated by the Italian school, and the impact purpose led by the French school, (Moudon, 1997). Therefore, the analysis of Abuja clearly embraces each of these purposes, through the description of why and how the city was built; but prescribes how the city would have been built and organised round communities as well as to have the desired impact of transforming Abuja into a 21st century city of sustainable communities.

### 3.3. The Development of Abuja-Federal Capital Territory

Contextually, and in the tradition of the Italian school of morphological study, a historical approach is adopted and supported with other schools of thought on morphology in other to effectively analysis Abuja. Underpinned by the brief introduction earlier on in this research, Moore (1984) believes that Abuja's creation as a Federal Capital City have been justified on many grounds such as;

- The City of Lagos was deemed incapable of continuing to function as a national and State capitals owing to shortage of land for physical expansion to accommodate current and future growth;
- The need for a neutral, ethnically neutral, easily accessible and central location that every Nigerian could lay claim, symbolising Nigeria's aspirations for unity and greatness
- A New Capital that is desirable and geographically secured with adequate land natural resources to facilitate urban development.
- A centrally located national capital that enables economic development and prosperity across the country (Umeh, 1993).

Many other scholars argued that these reasons as suggested or identified by Umeh (1993) are mere prescriptions and has not completely reflected the true state of things or socio-political divides that exist in Nigeria today (Nwala, 1997; Hill, 2012). Therefore, they concluded that, Abuja was created to suit the strategic interest of few privileged Nigerians (Nwala, 1997;

Hill, 2012). However, it could be argued that, at some point, a genuine desire did exist to use the new Federal Capital City to mediate national unity and spur rapid economic development, as vividly captured in Figure 3.1, which shows the location of the new Federal Capital Territory at the heart of the country. But the physical location of a state does not actually determine whether the people will be united or not rather, it has triggered more controversies between the Federal government and the original indigenous people of Abuja till date (Nwala, 1997; Hill, 2012).

However, Mabogunje (2001) believes that the nation's aspiration for unity and development where core principles which have been implicitly and explicitly identified and set aside and have guided the creation of the Federal Capital Territory. In principle, these core elements are; the principle of equal citizenship and the principle of environmental conservation. Others are the principle of aesthetics, the principle of functionality, the principle of effective regional development and the principle of rapid national economic growth.

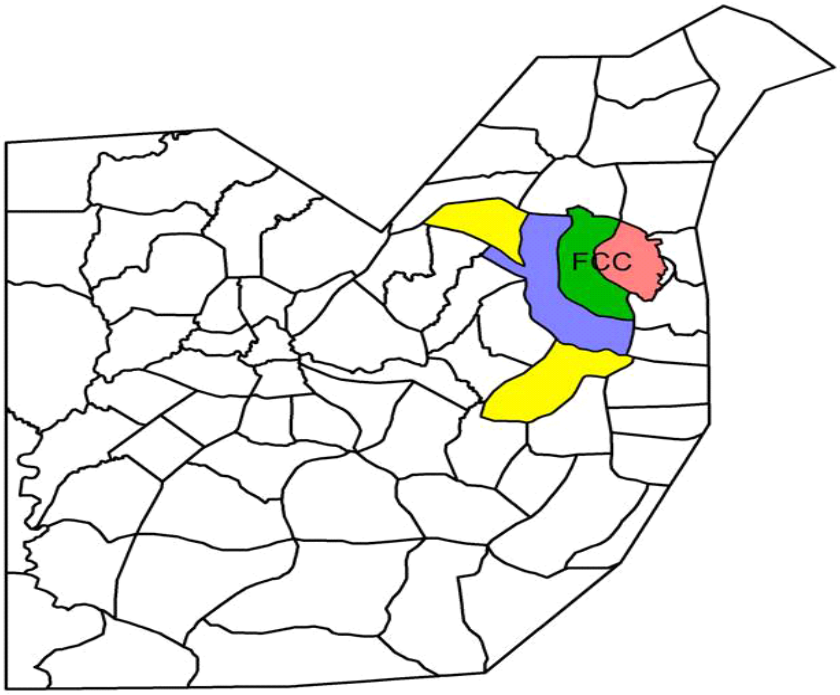
**Figure 3.1. Location of Abuja in Nigeria**

**Source:** FCDA Archives

Furthermore, in an attempt to demonstrate believe and practice these principles, the Nigerian government enacted ***Decree No 6*** that established Abuja as a ***Federal Capital Territory (FCT)*** shown in Figure 3.2, and the ***Federal Capital Development Authority (FCDA)***, as the

body to implement and deliver the nation's aspirations by assuming responsibility for planning, designing and developing the FCT (FCDA, 1979).

**Figure 3.2 Abuja Federal Capita Territory Showing City Locations**




**Source:** AGIS, 2006

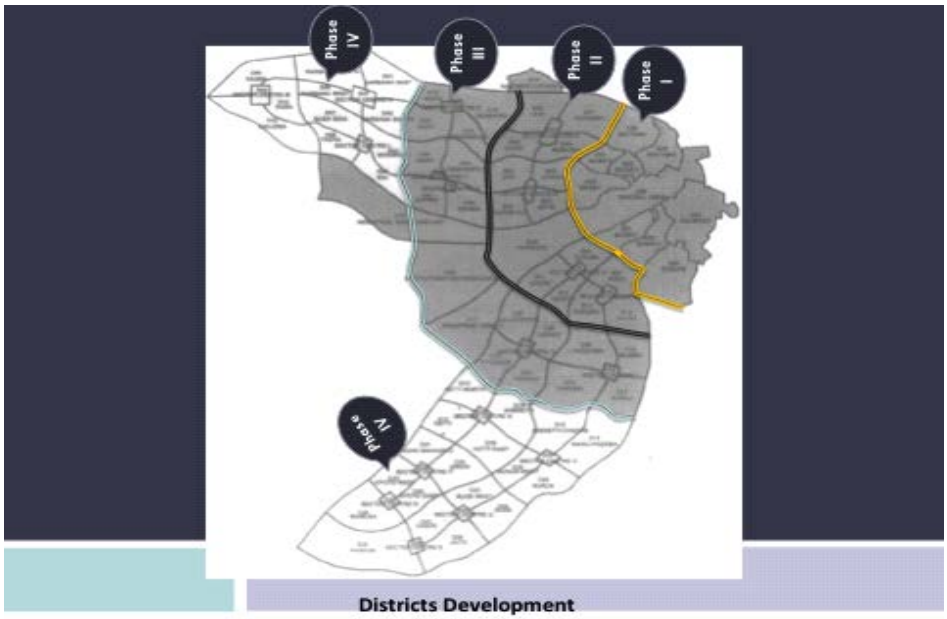
Sequel to these, Figure 3.2 highlights the physical size of Abuja FCT, which is 8000 Square Kilometres, out of which 250 square kilometres highlighted in colours, was carved out to be the ***Federal Capital City (FCC)***, while the rest 7, 750 square kilometres were designed to be ***satellite towns or city-regions*** (Ikejiofor, 1997). But how far this principles and decree has been implemented and achieved remains to be seen.

## 3.4 THE MASTER PLANNING OF ABUJA-CAPITAL CITY OF NIGERIA.

The Nigeria government empowered FCDA to implement several procedures concerning the actualisation of ***Decree No 6***. This institution started by initiating a number of research and technical studies, and planning exercises to gain the necessary information that will inform and drive the design of a Master Plan for Abuja. Following from this, an international competition was tendered in 1977 and Messrs International Planning Associates (IPA) which is a consortium of architects, city planners and engineers based in the United States was commissioned to prepare a Master Plan for the new Capital City to accommodate 3 million people (FCDA, 1979). What emerged from IPA was a Master Plan to create a city and several satellite towns or city-regions each with distinct identities. More detailed design of the

Central area of the capital, particularly its monumental core is shown in Figure 3.5, and was designed by Kenzo Tange, a world renowned Japanese architect. The Abuja city was to be developed in four phases, as shown in Figure 3.3.

**Figure 3.3 Four Developmental Phases of Abuja Federal Capital City (FCC)**



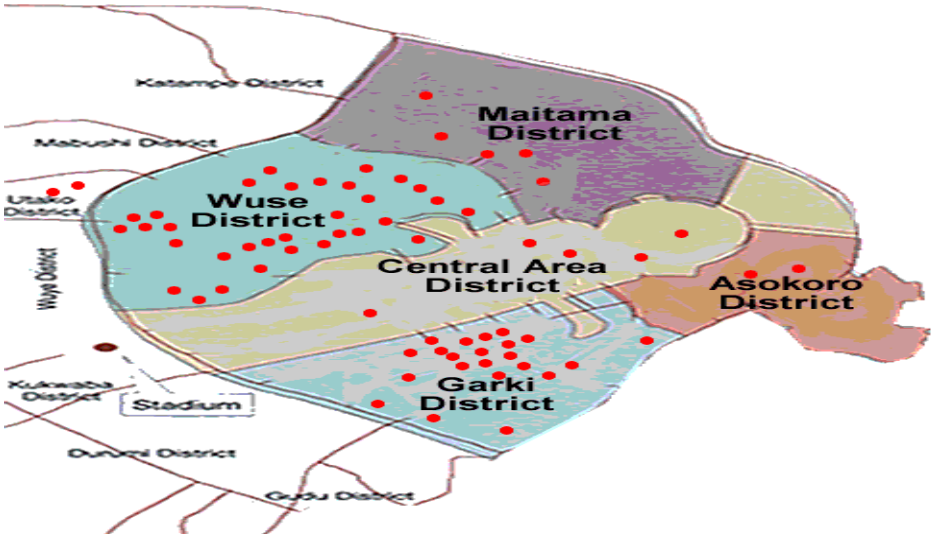

**Source:** FCDA (1979)

Phase 1 represents the Central District, designed to situate the seat of government of the Federal Republic of Nigeria, including all government establishments, and by extension to serve as the central business district (CBD):

- Presidential Complex, the National Assembly Complex, and Supreme Court, formed the 'Three-Arm Zone';
- Government Establishments and other Public Institutions;
- The Cultural Zones;
- Central Business District;
- National Sports Complex;
- Foreign Embassies and Missions;

In addition to being the seat of government, Phase 1 was designed to also accommodate four residential districts of Wuse, Garki, Maitama, and Asokoro shown in Figure 3.4, and provide for a further five sub-districts.

**Figure 3.4** **Abuja Phases 1**




**Source:** FCDA (1979)

Furthermore, Figure 3.5 shows that the City has encapsulated aspects of the seven guiding principles indicated earlier, as reflected in the Master Plan. The public spaces proposed within the Central Area are sequentially arranged to create an aerial axis thus:

1. National Arboretum and National Monument are located at the Aso Hill end of the axis
2. Central Park is located between the National Assembly Complex and the Mall
3. The Mall is flanked by Government buildings, along its two longer sides
4. Presidential Gardens located next to the Mall with the Presidential Residence in its midst
5. Central Square or National Square located at the opposite end of the axis, terminating the series of open spaces and the two diagonal parkways

**Figure 3.5 Abuja City Showing Central Area Layout**

**Source:** FCDA (1979)

Also, four adjacent minor squares were created to serve as nucleus for future public buildings evenly dispersed within the Central Area. The Malls that are several block-long are connected to the Legislature (National Assembly Complex) and the Executive (Presidential Palace and Municipal Administration Centre). However, the Judiciary (Supreme Court) is located further along the axis, beside the Central Square. Instructively, the pattern of arrangements of these buildings clearly shows and points out the seat of Nigerian government quite easily. Further, the five sub-districts include Nyanya, Karu, Gwagwalada, Kubwa, and Jukwoyi districts. These were each designed to cater for between 150, 000 to 250, 000 people, and organised around local businesses and employment that is to be autonomous, yet accessible to other parts of the city.

In the case of the Central Area, evidence suggests that, it has a large concentration of the wealth and business activities in the Federal Capital City that comprises the most priced real estates in the world, arguably. Asokoro district also serves as where most government ministers and the political elites' houses are situated, including State governors' lodges and guest-houses as well as other important buildings such as the secretariat of the Economic Commission of West African States (ECOWAS). It is quite interesting to note that, an average price for a dwelling in Asokoro is well over US$1.5 million dollars (Morah, 1993). Also, the price for an average residential house in Maitama is not far behind as it revolves around US$1 million (Morah, 1993). In the case of Wuse and Garki, they are mixed districts of residential buildings with commercial activities, and are famous for their markets, but properties here still cost within the ranges of US$500,000 to US$1 million dollars (Morah, 1993). According to (Morah,1993), the centralisation of government activities along with the concentration of business activities underpinned by the quality of infrastructure and services shown in Figure 3.6, has forced rental value for commercial and residential properties upward. This has also led to traffic congestion whilst also causing air and noise pollution in the city (Morah, 1993).

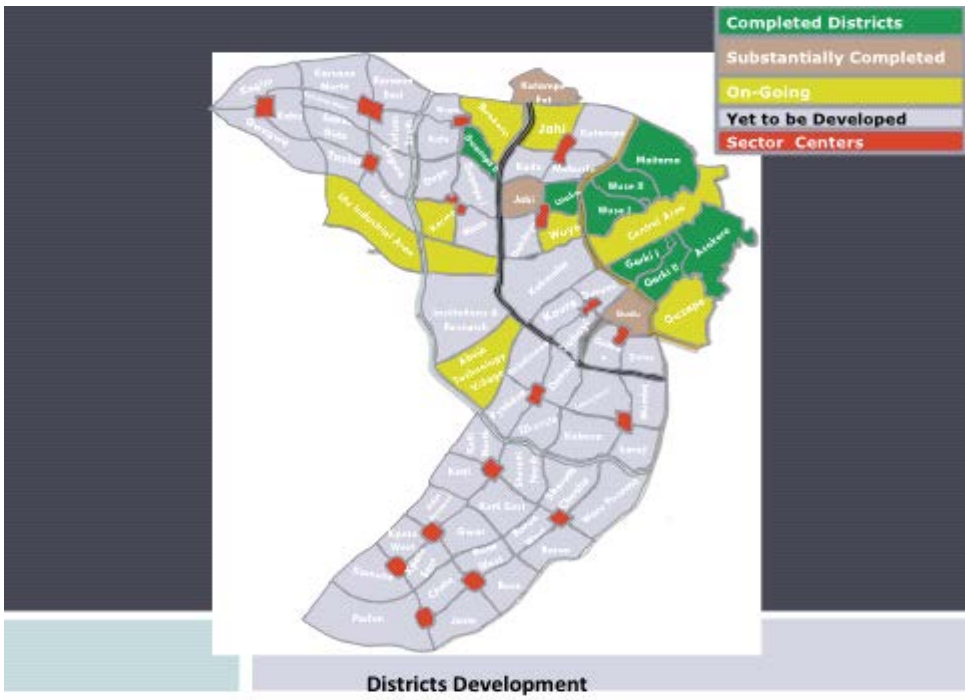
**Figure 3.6 Standard of Development in Central and Immediate Districts of Abuja City**

**Source:** Researcher 2012

Furthermore and relying on published statistical data from real estate developers in Abuja, it shows that one thousand square metres of land in Asokoro, Maitama, Wuse, and Garki

districts commands approximately N150m and above, which is the equivalent of US$900, 000 dollars and above (Echenim, 2011). It was observed that Morah (1993) the point that "built landscapes are often shaped by political and economic forces which are in themselves conditioned by particular logic". Stressing that the form Abuja has taken has been dictated by the haste with which the seat of government was relocated from 1986 to the eventual promulgation of Military Decree 51 of 12th December 1991 that eventually moved the Capital City from Lagos (Morah, 1993). Originally, available evidence suggests that the relocation to Abuja, was designed to be accomplished in phases underpinned by the pace of physical development (Morah, 1993). However, the sudden Military Decree 51 of 1991 which took no account of the fact that less than 40 percent of the 126, 000 housing units meant to have been completed in 1986 were not ready by 1993 was responsible for the forceful relocation (Morah, 1993). This is further reflected in Figure 3.7 which shows less than 20 per cent of the City had been completed at the time of final relocation in 1991 (Morah, 1993).

**Figure 3.7 Pace of Abuja Federal Capital City's Development**

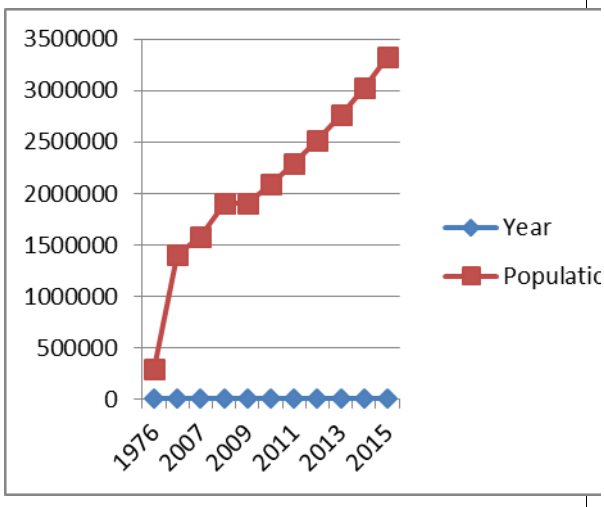



**Source:** FCDA (1979)

Instructively, the Nigerian government decision, though through military Decree, to relocate the capital city of Nigeria despite the fact that less than 20 percent of the city was completed clearly had major implications and consequences for Abuja's urban form witnessed today (Morah, 1993). The worrying fact is the continuous rise in Abuja's population figures without

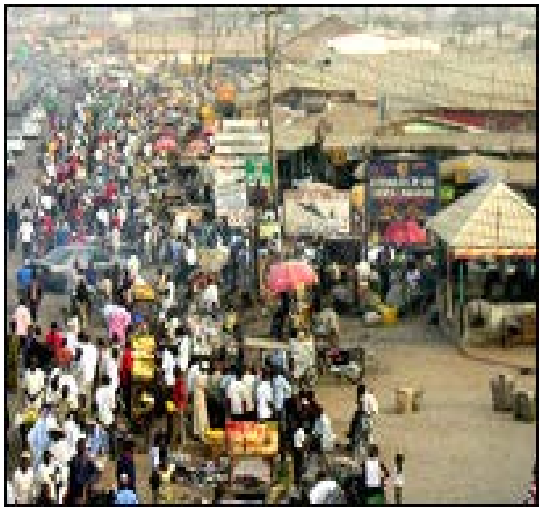
commensurate rise in the number of completed affordable houses. For instance, Abuja's population estimate rose from about 300, 000 in 1976 to well over 2.75 million in 2012, and this is expected to reach 3.02 million by 2015 as shown in Figure 3.8 which represents an annual growth rate of 9.3 per cent (UNFPA). Figure 3.8 also captures the consequences of rapid urbanisation without available critical social infrastructure and services needed to cater for the increased population that has led to the formation of informal settlements due to urban sprawl (Mabogunje, 2001). A typical instance is the initial plan to house construction workers in purposely built area in Phase 1 in other to avoid the development of informal housing and prevent urban sprawl from occurring. Unfortunately, this master plan had to be abandoned when the date for moving out of Lagos was brought forward which compelled the government to abandon purposely built areas for alternative accommodation in Nyanya (Mabogunje, 2001). The images reflected in Figure 3.9 sadly contracts what is usually associated with master planned cities such as Curitiba and Bogota.

**Figure 3.8 Abuja Population Growth Trends (1976 – 2015)**




**Source:** http://nigeria.unfpa.org/abuja.html

**Figure 3.9 Rapid Urbanisation in Abuja**



**Source: Senan Murray,** BBC News, Abuja, http://news.bbc.co.uk/1/hi/world/africa/6355269.stm

Therefore, it could be argued that, the slow pace of physical development underpinned by the forward revision of the relocation date from Lagos, and the accelerating rate of urbanisation resulted in acute housing shortages, which continues to manifest in various forms and dimensions in the city today (Ikejiofor, 1997; Mabogunje, 2001). Unfortunately, many

middle and lower-income earners are still compelled to share their dwellings that have further increased the overcrowding problems (Ikejiofor, 1997). Hence, dwellings originally designed and built to support one household ended up being used to house multiple households (Ikejiofor, 1997). Also, recent Abuja housing situation report suggests that housing shortages are increasingly manifesting in a rapid rate that has contributed to the proliferation of informal settlements within the city as table 3.1 shows.

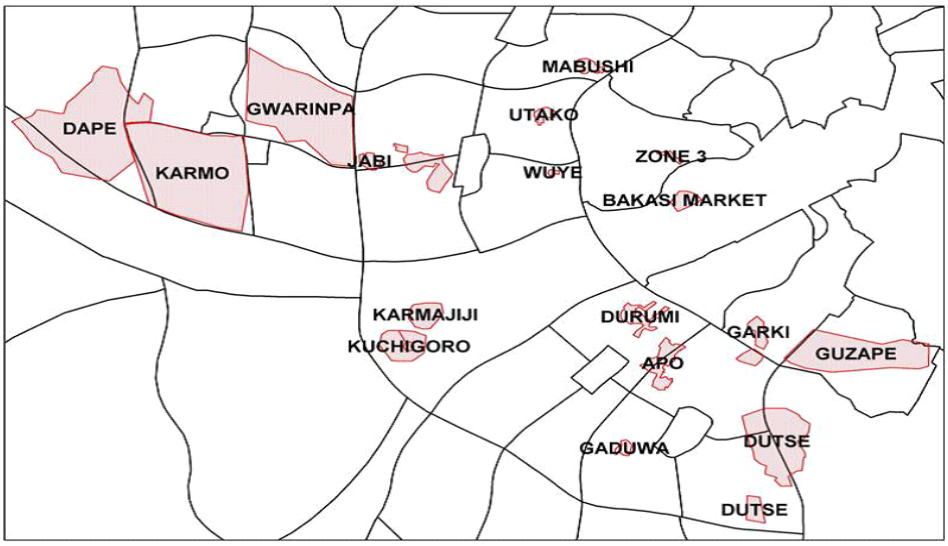
**Table: 3.1. LIST OF SQUATTER SETTLEMENT WITHIN THE FCT (FINAL REPORT STAGE 1)**

| ID | NAME | TYPE | AREA ha | DISTRICT |
|---|---|---|---|---|
| 1 | Bakasi Market | Market | 20.7 | Central Area |
| 2 | Zone 3 | Mechanics | 5.9 | Wuse I |
| 3 | Garki | Village/Market | 19.0 | Garki II |
| 4 | Guzape | Village | 225.8 | Guzape |
| 5 | Garki Village | Market | 14.7 | Gudu |
| 6 | Apo | Village/Market | 46.8 | Durumi, Gudu |
| 7 | Durumi | Squatter/Market | 32.3 | Durumi |
| 8 | Mabushi | Squatter/Market | 15.5 | Mabushi |
| 9 | Katampe | Village | 13.9 | Katampe |
| 10 | Gaduwa | Village | 9.4 | Gaduwa |
| 11 | Dutse | Squartter | 189.0 | Dutse |
| 12 | Dutse Village | Squartter | 21.1 | Dutse |
| 13 | Wumba | Village | 5.3 | Wumba |
| 14 | Mada | Squatter | 165.4 | Outside FCC |
| 15 | Kurbo | Squatter/Market | 54.5 | Outside FCC |
| 16 | Kuchigoro | Old Village | 3.7 | Kukwaba |
| 17 | Kuchigoro | Ext Squatter | 59.9 | Kukwaba |
| 18 | Karmajiji | Squarter | 37.9 | Kukwaba |
| 19 | Wuye | Squatter | 2.4 | Wuye |
| 20 | Jabi | Squatter | 14.0 | Jabi |
| 21 | Jabi/Dakibiyu | Squatter | 51.6 | Jabi, Dakibiyu |
| 22 | Utako | Squatter | 11.9 | Utako |
| 23 | Karmo | Squatter | 524.0 | Karmo |
| 24 | Gwarinpa | Squatter | 408.0 | Gwarinpa 1 |
| 25 | Dape | Squatter | 455.0 | Dape |
| | | **Total** | **2,412** | |

**Source:** AGIS, (2004)

Consequent upon this and as shown in Figure 3.9, informal settlements are obviously proliferated around the Federal Capital City boundaries, thereby stocking major environmental disasters and leading to profound hardships for residents (Adama, 2007).

**Figure: 3.10 Federal Capital City Squatter Settlements**




**Source:** (AGIS, 2006)

Expectedly, many of these settlements lack basic critical infrastructure and facilities including water, motorable roads, efficient electricity supply, adequate sewage and sanitation facilities, solid waste management facilities, and a structured urban management system to mention a few (Adama, 2007). Most profound is the issue of water shortages where scarcity has also affected the pattern of food consumption in households which invariably affects prices and increased the risk of water borne diseases leading to headlines such as "**Abuja's Iddo settlement: Capital of water crisis and poor sanitation".**

**Figure 3.11 Iddo Settlement**

**Source:**http://ipledge2nigeria.com/abujas-iddo-settlement-apital-of-water-crisis-and-poor-sanitation.html

**Figure 3.12 Karu Slums**

**Source: Senan Murray,** BBC News, Abuja:http://news.bbc.co.uk/1/hi/world/africa/6355269.stm

Other problems noticed include lack of motorable roads within these settlements that further compounds many already existing environmental problems that residents have to endure (Adama, 2007). Particularly is the case of inability to access these settlements to deliver basic services such as water, solid waste collection, easy movement of persons and security which is particularly vital to women and children (Adama, 2007). During raining seasons the roads and footpaths are impassable forcing residents into the inconvenience of having to park their cars at several distances thus forcing many residents to take public transport half of the way home only to collect their cars next day (Adama, 2007).

A specific example is the case of Jabi Motor Park (Figure 13) where near-by residents and users of the motor park continue to decry the appalling state of the environment, particularly

the improper disposal of solid wastes (Figure 14), open urinary and defecation in public spaces. Following the poor and degrading informal settlements and urban sprawl alongside well planned and organised affluent settlement problems witnessed in Abuja, the city has recently invited new euphemisms such as; "***Abuja, Two Peoples, one City***" or simply a "***Tale of Two Cities***", to itself. The Irony is that, many experts who had to contend with urbanisation and its attendant consequences in Lagos are confounded and literary confused by the rapidly unfolding deterioration state Abuja's urban environments has assumed (Latessa, 2014; Onwuemele, 2014).

**Figure 3.13 Jabi Motor Park (Largest in Abuja)**

**Source:***news.naij.com/21958.html – Nigeria* Cached Jan 31, 2013

**Figure 3.14 Refuse Dump in Karu**


**Source:** Senan Murray, BBC News, Abuja; http://news.bbc.co.uk/1/hi/world/africa/6355269.stm

Abuja is facing a growing problem of inequality and access to facilities including the outcome of urban opportunities that is gradually dwarfing what previously obtained in Lagos. This has led to questions about the sustainability of Abuja and possibility of its prosperity when statements like Abuja is not "**for poor people**" credited to a former Minister of the Federal Capital Territory is particularly worrisome (UN-Habitat, 2012). Evidence also shows that the former Minister subsequently presided over the demolition of informal settlements in an attempt to restore Abuja's Master as shown in Figures 3.15 and 3.16 respectively. Unfortunately, the policy of forced eviction and demolition is continuing, and the government also announced that nineteen informal settlements will be demolished in the next exercise to bring the overall figures of demolished houses to 124, 000 in two years (Vanguard, 2012).

**Figure 3.15 Demolition of Houses in Mpape**

**Source:** Vanguard Newspaper, September 25, 2012

**Figure 3.16 Demolition of Mpape Market**

**Source:** Vanguard Newspaper, September 25, 2012

Furthermore, large number of small-scale businesses and facilities supporting various households and communities such as hairdressing saloons, provisions shops, churches and mosques, schools, and workshops were demolished along with houses where many people lived (Mallo and Obasanya, 2012). Arguably, turnover for small-scale businesses are relatively low, they nevertheless fulfil vital needs and catered for a considerable proportion of residents (Mallo and Obasanya, 2012). A significant consequence of this regressive approach worsened the crime rate in the city, increased poverty and homelessness as displaced residents now have to travel several kilometres to work in the Capital City (Mallo and Obasanya, 2012). Apart from the environmental consequences of using cars in a planned city, displaced residents in Abuja are poorer because they are often employed in low-paying jobs and transportation takes a significant chunk of the earnings (Mallo and Obasanya, 2012).

Therefore many workers spend well over 60 percent of their wages on transportation to and from work.

### 3.5 Region-cities Development Initiatives by the FCDA.

Abuja is further divided into region-cities referred to as satellite towns and they function as six area councils that also represent administrative delineation for democratic political representation to achieve effective governance, these councils are:

- Abuja Municipal Area Council (AMAC)
- Abaji Area Council (AAC)
- Bwari Area Council (BAC)
- Kuje Area Council (KAC)
- Kwali Area Council (Kw AC) and
- Gwagwalada Area Council (GAC)

In consistent with the Abuja Master Plan, all satellite towns were designed to be established as self-sufficient and autonomous areas and were expected to absorb population overflows from Abuja Capital City (Williams and Shenley, 2012). The initial projected population envisaged at the various development phases of Abuja Capital City before the overflow to satellite towns were;

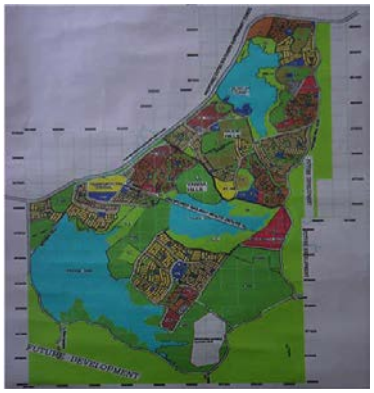
- Phase 1…… 230, 000
- Phase 2…….585, 000
- Phase 3…….640, 000
- Phase 4…….1, 700, 000
- Ultimate Population …… 3, 155, 000

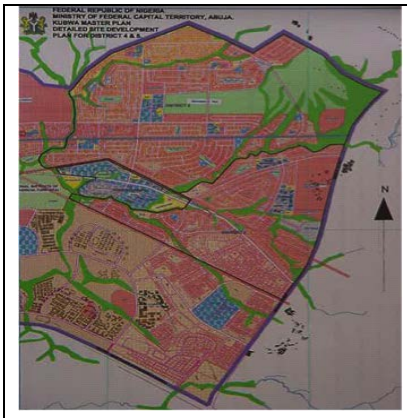
On the political front, the leaders or administrative heads of these cities were to be elected council Chairmen along with their local Councillors but with limited powers within the

confines of Federal Capital Development Authority (FCDA) which remains the sole body responsible for developmental activities in the Area Council (Ikejiafor, 1997; Adama, 2007; Mallo and Obasanya, 2012). Consequently, the executive heads of the satellite communities are the Federal Zonal Managers (FZM) who are the representatives of the Urban and Regional Planning Development Authority in the FCDA. These Federal Managers are charged with the responsibility of providing complementary development to the Federal Capital City to attract good numbers of people away from the Capital City (FCDA, 1979).

The same principles underpinning the planning concepts of Abuja Capital City is also used as the framework for the development of its region-cities. Abuja's regional-cities are designed and planned in hierarchical order comprising Districts with Residential Neighbourhoods and corresponding Districts and Neighbourhood Centres, with each region having its own unique Master Plan that is further reflected in Figure 3.16. In consistency with the master plan, the development of these region-cities were to proceed in phases supposedly at the same pace with the rate of urbanisation in the Capital City which has not been the case (Ikejiofor, 1997; Mallo and Obasanya, 2012).

**Figure 3.17 Master Plans for Abuja City Regions**

| | | |
|---|---|---|
| **Kusaki-Yanga Master Plan** | **Bwari Master Plan** | **Karshi Master Plan** |
|  |  |  |
| **Source: FCDA 2004** | **Source: FCDA 2004** | **FCDA: 2004** |
| **Kubwa Master Plan** | **Kuje Master Plan** | **Dobi Master Plan** |



**Source: FCDA, 2004**

**Source: FCDA, 2004**

**Source: FCDA, 2004**

**GOSA Master Plan.**

**Source: FCDA, 2004**

### 3.6 Critical Evaluation of the Sustainability of Abuja

Clearly pointed out in the case study of Curitiba Brazil, fundamental elements of a sustainable urban form is the reflection of compactness, mix-uses, and inter-connected road layouts, supported by strong transport networks, environmental controls, and high standards of urban management (Williams, et. al. 2000). These attributes and characteristics features of sustainable cities are shown in Table 3.2 (SCI, 2012).

**Table 3.2. Indicators for Sustainability**

| Economy | Environment |
|---|---|

***Unemployment rates/jobs:***

- Underemployment, employment unemployment rates
- Percentage of green jobs in the local economy
- Average professional education years of labour force

***Economic Growth:***

- Annual GDP growth rate
- Annual GNP growth rate
- Net Export Growth rates
- Foreign Direct Investments

**Social**

***Complete neighbourhood / Compact city:***

- Access to local, neighbourhood services within short distance
- Crime rates
- Measure of income distribution and inequality

***Housing:***

- Percentage of social, affordable, priority housing
- Breakdown of housing sector by property type (owner occupied/rental, single / occupant / couples / family / multi-family etc.)

***Quality Public Space:***

- Percentage of road ways in good conditions
- Percentage of green space (public Parks) coverage in relation to city area and / or population size

***Education:***

- Number of schools with environmental education programs
- Adult literacy rate

***Sanitation:***

- Percentage of population with access to water-born or alternative (and effective) sanitary sewage

***Green Spaces:***

- Percentage of preserved areas, reservoirs, waterways, parks in relation to total land area
- Percentage of trees in the city in relation to city area and/or population

***Reduced Greenhouse gases / Energy Efficiency:***

- Total amount of GHG emissions per city and per capita
- Percentage of total energy consumed in the city that comes from renewable sources

***Mobility***

- Transportation mode split – percentage of each mode – private, public, bicycle, pedestrians
- Average commute time and cost

***Water Quality/Availability***

- Total amount of water available
- Water quality index/score
- Proportion of population with access to adequate and safe drinking water

***Air Quality***

- Levels of particulate matter (PM10 –mg/m3)
- Levels of particulate matter (PM2.5 –mg/m3)

***Waste/Reuse/Recycle:***

- Percentage of total waste recycled
- Volume of solid waste generated

| | |
|---|---|
| ***Health:***<br>• Mortality rate/life expectancy<br>• Percentage of population with access to health care services | |

**Source:** SCI (2012).

Furthermore, looking critically at Figure 3.1 showing the interdependence of the human ecosystem on the one hand, Figure 2.2 and Table 2.1 on the other, clearly reveals that Abuja Federal Capital City cannot be described as a sustainable city or a city of sustainable communities as suggested by (RIBA, 2004; Stanton-Geddes et al., 2013). Also, Figure 3.1 is a direct manifestation of the discussions around Figure 3.2 regarding the spatial concentration of the seat of government and related establishments and parastatals in one location, and this has shown to have huge implications for road congestion and environmental pollutions (Morah, 1993). Further, Figure 3.18 shows that during the morning rush hours, thousands of motorists constituting more than 85 percent of vehicular movements head for the same direction into the city, and this repeats itself at the close of business (Morah, 1993).

A principal reason for this development is not farfetched, because about 70 percent of the total workforce in the Abuja Federal Capital Territory work in the Central Business Area or the Three Arms Zone, whilst less than 13 per cent of this total actually live within Abuja Federal Capital City (Biliyamin and Abosede, 2012). Consequently, about 67 percent of those that work in Abuja Federal Capital city commute in and out of the city (SERAC, 2006). Contrary to this, Curitiba and Bogota which are world acclaimed sustainable cities about 90 percent of the city's inhabitants use mass public transports and alternative transportation systems (Rabinovitch, 1992; ICLEI, 2002; Lundqvist, 2007). Further evidence as postulated by Weitz (2003) also shows that vehicle, or motorised travels can be significantly reduced, by maintaining a balance between employment and housing. However, in the case of Curitiba,

high density housing were provided along industrial corridors which directly reduced travelling need, including motorised travels, and of alternative mode of travels (Rabinovitch, 1992; ICLEI, 2002; Lundqvist, 2007). In sharp contrast, the strategic absence of mass-transit buses like the by-articulated buses used in Curitiba including adequate and functional transport infrastructure, trams, bus-metros, and dedicated routes for bicycles and walking have made the use of personal car for travels a necessity.

**Figure 3.18 Traffic Congestion in and out of Abuja FCC**

**Source**: Biliyamin and Abode (2012)

**Source**: www.nigeriannewsworld.com

Nigeria's Federal Capital Territory like many other cities in the country still suffer from absence of secured and comfortable mass transit mode of travel, creating a vicious circle of increased fares and high number of private car use. There are huge associated socio-economic and environmental costs, and prominent amongst these is road congestion (Goodwin, 2004) and the attendant financial costs, travel time, and above all, the health and environmental costs. These costs should not be taken for granted (McKinnon, 1998), which Schrank, et al., (2012) further buttresses in their study that the nature of costs associated with road congestion and the likely impacts on the overall economy is quite significant in any economy. For instance, they also stressed that road congestion costs to the US economy US$ 101 billion dollars of lost time and fuel cost which amounts to 4.8 billion lost hours along with 1.9 billion gallons of fuel (Schrank, et al., 2012).

In addition to the above with specific reference to Abuja, it was discovered that congestion prolongs travel time and also makes it difficult to plan general movements including work journeys where it becomes increasingly hard to predict times of arrivals according to Biliyamin and Abosede (2012). Also, transportation costs compared to work distance eat chunk of the already low incomes of workers especially those that live on the edge of the city who tend to suffer disproportionately relative to other income groups. It is instructive to note that, this development has been worsened because of the ongoing demolition exercises of informal settlements within Abuja city boundaries, therefore pushing the poor to marginal lands and areas of ecological vulnerabilities on the edge of city boundaries where overcrowding abounds with potential health and other security dangers. Overall, this has huge implications for urban equality, governance and participation in urban socio-political and developmental processes, particularly when it comes to accessing urban opportunities and amenities.

The Abuja Federal Capital Territory has developed in a contradicting direction against the original principles and intent of the master plan which clearly emphasised the development of a housing policy and program that will cater to the residential needs of residents (FCDA, 1979). Current realities suggest that inadequate supply of quality housing units meant that many existing houses were above the means of low income earners in Abuja therefore accessible to the upper middle and upper income earners only. Also a closer look at how the city has evolved over the years suggests that luxurious accommodations are largely

concentrated in the Central Business District, Asokoro, Maitama, and Wuse. This revelation clearly has many implications for urban equality and access to urban opportunities based on the lack of sufficient and adequate housing mix (low, middle class and upper class). In effect, this means that Abuja Capital Territory is spatially segregated according to income and affordability. It could be argued that whilst there is no formal discrimination in the city, the existence of income segregation is quite pronounced as aptly reflected in the quotation that:

> *"While the rich go to swim in hotels and enjoy in night clubs, the lesser mortals make do with shacks and beer parlours with occasional visits to Parks and Gardens. For the affluent who could afford accommodation in high-brow areas like Prince and Princess Estate, EFAB Estate, Trade more Estate, and the other Estates that abound there, such a person should be ready to cough out N1.2million per annum for a self-contained room and parlour and N1.6million per annum for a 2-bedroom".*

The outskirts of Abuja City show a rapidly degrading and sad 'tale of two cities'. One part of the city is awash with relatively developed and functional infrastructure and services whilst in the 'other city', people apparently live in squalor because of the prevailing deplorable conditions with no water, electricity, roads, and a haphazard transport network.

Closely linked with these is the issue of road congestion that continues to exacerbate environmental pollution in the Federal Capital City. According to the study of Moen (2008), hourly $CO^2$ concentrations in the City exceeds the Nigerian ambient air quality standard (UN-Habitat, 2012). This is because data collected and measurement taken in the afternoon across all the intersection points to gauge the amount of $CO^2$ in the atmosphere showed that it clearly exceeded the $CO^2$ per 1-hour limit (UN-Habitat, 2012). The areas of the city that have attracted particular concerns are 'AYA' and 'Nyaya' where the average $CO^2$ per 1-hour measurement is 10 times more than the Nigerian standard, tailing off to 5 times the normal standards in both Berger Junction and the British Council area in the city (UN-Habitat, 2012). It is also disturbing to observe that the results from the readings were found to be in excess of the World Health Organisation that suggested 10 - minute exposure limit of 0.175 ppm (UN-Habitat, 2012). Therefore, the $CO^2$ concentration level in Abuja is dangerous and harmful to residents, particularly public officers such as traffic management and security personnel who are constantly exposed, owing to the nature of their work (UN-Habitat, 2012).

Other worrying environmental problems are: noise, water pollution, flooding, and solid wastes disposal and management, particularly in informal settlements that dots the city boundaries (UN-Habitat, 2012). Commentators have also directly linked these externalities to the rapid expansion of Abuja that has attracted many unskilled men and women into the mining sector including construction aggregates (granites) (Akor and Achakpa, 2011). It is disturbing that the government have continuously demonstrated their lack of comprehension and inability to control and mitigate these many environmental polluting problems, thus the call for sustainable community development and organisation to combat unsustainable activities in Abuja (Akor and Achakpa, 2011).

It is therefore reasonable to conclude that sustainable community development is widely seen as an effective strategy for achieving sustainability and development, particularly in urban areas which makes the Abuja case germane where 70 percent of its master plan is uncompleted rather giving way to unsustainable urban form. Also, the lack of citizen's engagement and participation in the planning, design and construction of the city has led to the creation of urban forms that alienate majority of its citizens. This development makes the argument for the development of Abuja Federal Capital Territory into a 21$^{st}$ century city of sustainable communities overwhelmingly convincing. Although, achieving a sustainable community would require the creation of urban form and also the continuity in tradition and local knowledge to ensure that citizens are not isolated or made to feel lost in the evolving architecture. Rondeau (2013) argued that, "Cities are social networks, they act as a platform of exchanges, of continuous communication, perpetual movement, they connect people together, *it's no longer a place we design for individuals to live but it's a place that is adapting to the people. For a sustainable world, we need sustainable buildings but most of all we need to design for sustainable living*." Available evidence as exemplified by Curitiba city shows that, urban form is crucial to sustainable community development hence sustainability and development.

### 3.7 Summary

It has been evidently established in chapter three and through critical appraisal of Abuja Federal Capital Territory that there is the need to design a framework that will inform the relevant authorities of the importance of developing Abuja into a cluster of sustainable communities. It also detailed the foundational history of the city and views expressed in the master plan of how this is expected to function in other for it to avoid unnecessary

environmental and physical limitations observed in Lagos which was the former Capital City of Nigeria. Data available suggest that Abuja Federal Capital Territory has clearly deviated from the original Master Plan that heralded it into existence, and what has become obvious is the rapid degeneration of the city into an unsustainable urban form. This has therefore made scholars to draw the conclusion that it has become two cities in one where affluence run side by side with urban poverty, which has created a wide margin in inequality to the access of available opportunities the city has to offer.

Furthermore, the past and current ongoing demolition of informal settlements around the Abuja city has forced many of its residents to relocate outside the City boundaries and beyond. The consequence of this policy has resulted in distance travels for commuters; deepening poverty due to transportation costs for workers despite low wages, and above all, has aggravated traffic congestion and environmental pollution in the city. A case study example of a sustainable community and city was identified in Curitiba, Brazil. It showed that sustainable community development was used to achieve sustainable development through the encouragement of local participation from the planning and design stages up to the management stage of Curitiba City that therefore has motivated residents to take ownership of sustainable policy initiatives. This bottom up community participation approach turned Curitiba into one of the most sustainable and liveable urban environments in the world.

The chapter further outlined the fact that out of the 7,750 square kilometres of Abuja Federal Capital Territory only less than 40 percent has been built, therefore, it is instructive to focus further development of the city towards sustainable community development. It was proven that like the case of Curitiba, this approach further allows the participation of all stakeholders in its development and thereby empower and enable communities to take ownership of the policies and initiatives towards achieving sustainable development. Following from the above, chapter four details the methodology adopted as suitable for realising the main aim of this study, which is to produce a conceptual framework to guide the development of Abuja Capital Territory into a 21$^{st}$ Century City of Sustainable Communities.

# Chapter Four

## 4.0 Research Methodology.

### 4.1 Introduction.

This chapter sets out the various proposed strategies and philosophical persuasion used to gather, present and analyse the data and final results of the study. The philosophical underpinnings to the study are what crystallize the tools and techniques employed to achieve the aims and objectives of the study. The use of these tools and techniques is also justified in this chapter. The research used the triangulation research approach, which is basically a combination of quantitative and qualitative methods as the most appropriate for the study because of the research question proposed.

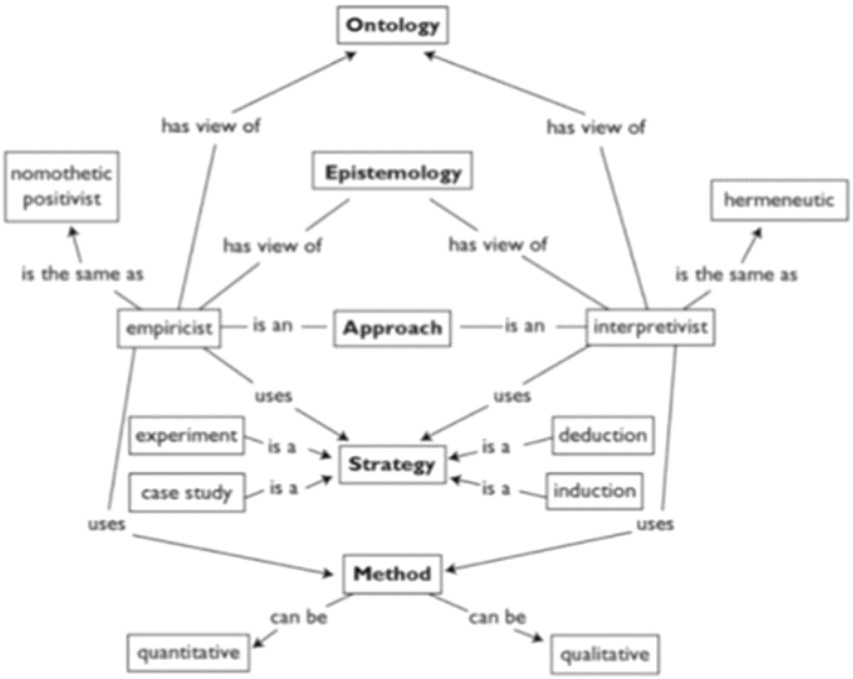
### 4.2 Research Design and Rationale.

Underpinned by the knowledge acquired from the many relevant literatures reviewed including commentators' views about sustainable development and how to achieve sustainable communities', the design of the research process adopted is set out in Table 4.1. The discussion covers epistemological positioning through which knowledge is acquired on the research subject. Kothari (2004) opines that research represents a process that involves the search for knowledge. However, it also demonstrates a progressive and systematic way of finding answers to specific questions and issues that may fascinate people or organisations (Dawson, 2009). Also, research is an academic exercise that triggers the instinct of inquisitiveness that involves scientific investigation from the known, confronted with the unknown and this is the foundation of knowledge Kothari (2004).

### 4.3 Epistemology of Research

The concept of epistemology basically establishes the nature and justification for human knowledge. It further justifies how we came to know what we know, and what kind of knowledge is possible and legitimate (Burrell & Morgan, 1979; Hoffer and Pintrich, 1997; Crotty, 1998; Niehaves, 2005). According to Carter and Little (2007; Marsh and Furlong 2002) as clearly reflected in Figure 4.1 the epistemological processes and steps involved in knowledge acquisition whilst relying upon our senses. It also states how truth can be differentiated from falsehood, and how we develop concepts in our minds to give coherence to our thinking about the world we live in, and whether it is a 'real' or a socially constructed world (Carter and Little, 2007).

**Figure 4.1. Epistemology and Methodology**




**Source:** Dudovskiy (2011)

From the above clarification, it is necessary to indicate that epistemological positioning does not bind researchers to a particular or set of research methods, as all methods are open to researchers of all epistemological positions, but what it does is that it influences the way research methods and attendant results are interpreted. Therefore, it is inherently vital that a researcher clearly states the epistemological position in a succinct manner. It could be argued that personal epistemological beliefs will normally reflect how individuals come to know, think, develop theories and beliefs they hold about what they know, and the manner in which such an epistemological positioning came to define the intellectual processes of thinking and reasoning. Consequently, the argument of Creswell (2007) and Saunders (2007) agreed that epistemology remains a key aspect in the theory, study and foundation of knowledge. Hence it concerns the extent, scope, validity and divergence between a subjective opinion and objective scientifically justified belief (Bryman, 2012) broadly viewed between positivism and social constructivism (Bryman, 2012).

In other word three epistemological positions are often advanced in research: objectivism, constructionism, and subjectivism (Crotty, 1998). Objectivism, sometimes referred to as logical positivism, evaluatism, empiricism, and dualism, developed from the empiricist tradition of natural sciences, which sees social sciences in the same light as natural sciences where it is possible to observe occurrences and understand them accordingly without any mediation (Bunge, 2004). Scholars who propose positivism believe that just as ‘matter’

behaves in natural sciences human beings respond unconsciously to external impetuses and their reaction can be determined from their behaviour. The supposition from this is that ‘meaning' is inherent in individuals, and held as objects, and this objective truth is directly observable and measurable. In other words, knowledge can only be acquired through experience and observation (Ernest, 1995). Consequently, researchers of the objectivist persuasion would search for causes, effects, and explanations, seeking to predict events and test theories and hypothesis, believing knowledge to be objective and demonstrates the logic of discovery.

Subjectivism commonly referred to as interpretivism, absolutism, relativism, post positivism, and social constructitivism, is viewed as the extreme opposite of objectivism, and mainly holds the view that knowledge is generated from the mind therefore completely independent of reality (Creswell, 1994). It argues that, acquiring knowledge about the world is a personal phenomenon, and reality is what individuals generally interpret it to be, thus, the concept is founded on the logic of interpretation (Creswell, 1994). Underpinned by this interpretation and understanding, the concept of truth is relative to individuals and disciplines rather than absolute because reality is an aspect of the individual mind. This is therefore logical given that individuals are not only products of different settings they also acquire knowledge differently and variously, meaning that knowledge is not value free but a manifestation of individuals’ exposure to divergent values’ interpretations. This is consistent with Evance (2000) postulations that state the difficulty in detaching one’s experience from purpose and value that brought about the experience. Hence researchers of subjectivist persuasion tend to veer towards the use of qualitative research methodology.

On the part of constructivist epistemology, it basically lies between the two epistemological extremes of objectivism and subjectivism, and shares some elements of both extremes, whilst accepting the assumption that real world can limit our experiences and that multiple realities exist (Crotty, 1998; Bunge, 2004). Therefore, it is stated that the world is a social construct that is derived from the creation of the mind through engagement with the world. Symbols represent the derivatives of culture, which are then used to create realities. Instructively therefore, knowledge is based on imagination, and is a function of perception, sensory experiences, and social interaction ‘meaning’ is therefore a result of interpretation from individual’s experience and understanding (Cobb, 1994; Phillip, 1995). The key aspect of this argument is the view that individuals are either of different cultural persuasions or of

different generations, and as such they are likely to construct different meanings from the same phenomena (Archer, 1995; Biggs and Buchler, 2008). Following these views, constructivists tend to favour quite diverse and useful methods towards scientific research rather than singular method (Biggs and Buchler, 2008). It can be said that constructivists consider knowledge as a theoretical construct. According to Guba and Lincoln (1994), constructivist researcher is intrinsically linked to the object of the research in ways that creates findings or meanings whilst the research progresses. Hence, constructivist researchers clearly favour the use of qualitative research methodology in the conduct of research.

The rigid boundaries drawn between natural sciences and social science research has triggered many controversial debates between scholars and commentators alike on the use of divergent epistemologies which has implications on the appropriate methodology needed for the conduct of research. Thus leading to calls for the suspension of judgment on ontological and epistemological concerns and for researchers to adopt a pragmatic approach (Hughes and Sharrock, 1997). Underpinned by the argument discussed above tie in with Hughes and Sharrock (1997) argument and conclusions that many contemporary researchers are pragmatists:

> *"do not worry about epistemology and ontology but about the particular problems they confront from their theories and investigations…If all that matters is that scientists go about their business…using methods appropriate to the problems they have to deal with, then philosophical worries about ontology and epistemology are an irrelevance…There is certainly no reason to feel bound by stipulations about a unified method or a unified ontology for science, for on these arguments no such creature exists".*

Therefore, researchers have observed that relying on methods informed by one epistemology may obstruct research questions from being addressed in sufficient depth and breadth, and this is crucial to any research endeavour (Durham, et. al (2011). Many researchers have indeed advanced the appropriateness and advantages in conducting a piece of research from a number of different ontological and epistemological perspectives (Soini, et. al., 2011). Consistent with Green (2007) who argued that conducting a research from different epistemological and ontological premise brings "*divergent and even contradictory positions into conversation with one another*", and this deepens our grasps of the subject matter and the potential to open "*new paths for exploration"*. Further stressing that, *"Important paradigm differences should be respectfully and intentionally used together to engage meaningfully*

*with difference and, through the tensions created by juxtaposing different paradigms, to achieve dialectical discovery of enhanced, reframed, or new understandings*" (Greene, 2007).

Sequel to this, the advantages of epistemological and ontological positioning is discovered in the potential of opening the minds of researchers to other possibilities, and this can only further enrich and enhance the research abilities and confidence of the researcher. This is particularly the case given that the appropriateness of the chosen methodology to a research problem determines the level of confidence the research community and policy makers will attach to the research results.

### 4.4 Adopted Epistemology and Approach to this Study

The researcher adopted a constructivist epistemological positioning informed by the fact that, whilst there is a real world, there are several other realities informing our views and interpretation of 'meaning' implying that there is no single method to scientific research, rather the existence of many methodologies which is consistent with Cobb (1994; Phillip, 1995). The relevance of this view is germane given that the main aim of this study is to develop a conceptual framework to guide architects and other built environment professionals in the urban design of Abuja Federal Capital City of Nigeria into a 21$^{st}$ century city of sustainable communities. This endeavour requires a research depth that will allow the exploration of how the Abuja Master Plan is currently being implemented from stakeholders' perspectives, and how Abuja's urban space can be recalibrated or redesigned into sustainable communities. Therefore to enhance liveability and quality of life in Abuja, the task cannot be based on a single research methodology.

The depth of the research enabled the researcher gain access to the full picture of the degree of equality of access and outcome of urban opportunities that Abuja city could offer its residents and other stakeholders. Research depth also encouraged the participation of the Abuja communities, aired their views, gave meanings to issues, and embraced realities about the unfolding physical development of Federal Capital City, and their interpretation of these meanings and realities were broadly obtained. It is vital to note that research depth is important given the diverse stakeholders, ranging from disenfranchised communities to businesses, governments at various levels, civil societies; professional bodies such the Nigerian Institute of Architects, the Architect Registration Council of Nigeria, and the

Nigerian Institute of Planning etc. Such depths can only be truly achieved through the use of qualitative research methodology (Higgs, 1997).

The research established a wide breadth that is important because the results from this study are objective and standard enough to be generalised, which is particularly the case due to the interest of the diverse stakeholders. A further survey was undertaken to unearth and quantify the urban environmental problems suffered or experienced by Abuja residence, and to project the socio-economic costs associated to these urban environmental problems. Thus a quantitative research methodology was used to gather necessary data and information; hence the mixed research (triangulation research method) approach is employed in this research. Using this method allowed the covering of sufficient depth and breadth sought in the research according to (Chen 1997; Creswell et al., 2007).

### 4.5 Research Methods

Dawson (2002) viewed research method as the process or technique used in collecting and analysing data. This assertion further stresses further that general principles guide a research. Similarly, Kumar (2005) and Sridhar (2009) defined research method as a way to systematically resolve research problems. Moreover, Kothari (2007) has indicated that research methodology not only includes research methods but also the logic behind the methods chosen in the context of the research and explains why those methods are used. Thus, research methodology is an important guide to solving research problems and helps the enquirer to avoid possible mistakes.

Also, the researcher firmly believes that the feelings and emotions of Abuja's inhabitants, architects, and other built environment professionals are crucial to the research being undertaken because of how they construct meaning, knowledge, reality, and determine what is truth and false which cannot be detached from their individual background, prior experiences, and value system. Emotions and feelings such as these can only be effectively captured using the case study and the interpretative phenomenological (IPA) methods of data gathering and analysis (Smith, 2004; Smith, et. al 2009).

The interpretative phenomenological approach (IPA) clearly affords the researcher the opportunity to comprehend the life experiences of an individual; how they made sense of the experiences and the meanings that the experiences hold for them (Smith, 2004). It also allows the understanding of real experiences with living in Abuja communities, and they made sense

of their experiences and in the process, the researcher is able to determine the meanings that those experiences hold for the Abuja urban communities. Also, the IPA is a strong idiographic approach, meaning it is very suitable for an in-depth investigation of individual's personal experiences to obtain their unique understanding, underpinned by the depth of understanding required in this study; IPA becomes a critical and useful method to adopt. It is often stated that, the use of IPA approach fits with the use of semi-structured interviews that allows for the participants to provide a fuller, richer account of their experiences than would have been possible when suing normal quantitative instrument. Thus, it grants the researchers more flexibility to probe new lines of enquiry as they emerge. The interviews as recorded further transcribed into word texts after taken formal permission from the participants before subjecting it to a detailed qualitative analysis to elicit important themes and perspectives from the responses.

The research also used case study method that inherently complements the IPA method given that case study method becomes necessary to cover a holistic and in-depth study required in a research (Feagin, et, al., 1991). Thus, case study is most suitable when capturing the experiences of participants, and the meanings attached to such experiences is what is required which can further be facilitated when data are gathered from multiple sources. Like stated earlier, quantitative methodology also be employed through the use of questionnaire survey to discover and quantify the urban environmental problems suffered or experienced by Abuja residences, particularly to project the attendant socio-economic costs to these urban environmental problems. In the first place, a sample framework was designed to guide the number of questionnaires to be conducted amongst each segment of stakeholders so that the data collected is a true representation of the total sample size required as shown is Table 4.1.

**Table 4.1** **Research Design**

| Research Design Areas | Research Design Option | Selected Option |
|---|---|---|
| Epistemology | Objectivism<br>Constructivism<br>Subjectivism | Constructivism |
| Research logic | Deduction<br>Induction<br>Retroduction | Retroduction |
| Research approach | Qualitative<br>Quantitative<br>Triangulation (mixed method) | Triangulation(Mixed Method) |
| Research methodology | Grounded theory<br>Ethnography<br>Interpretative Phenomenology<br>Case study | Interpretative Phenomenology<br>Case study |
| Case study typology | Single<br>Double | Double |
| Source of evidence | Documentation<br>Archival records<br>Interviews<br>Direct observations<br>Participant observations<br>Physical artefacts<br>Plans and drawings | Interviews<br>Direct observations<br>Plans and drawings |
| Sampling strategy | Typical case<br>Random purposeful<br>Opportunistic<br>Intensity<br>Criterion | Typical case (City selection)<br>Random purposeful |
| Methods | Data coding<br>Cognitive mapping<br>Survey<br>Focus Group<br>System dynamic modelling | Survey |
| Analytic Strategy | Theoretical propositions<br>Rival explanations<br>Case description | Theoretical propositions<br>Case description |
| Analytic technique | Pattern matching<br>Explanation building<br>Time Series analysis<br>Logic models<br>Cross-case synthesis | Explanation building |

**Source: Adapted from various sources**

## 4.6 Research Populations and Sampling

Research population refers to the total of items about which information is desired (Kothari, 2007). Mugo (2010) defines it as a group of individuals, persons, objects or items from which samples are taken for measurements and from whom information is to be obtained (McDaniels and Gates, 1998; De Vaus, 2002) and to which a generalization is to be made (Babbie, 2008). The population in this research therefore are residents of the six Area Councils in the Federal Capital Territory of Nigeria in addition to the built environment Professionals, practicing in the Territory.

There is also the need to clarify study population in this research. As noted by Babbie, (2008); McDaniels and Gates, (1998); De Vaus, (2002), a study population is the aggregate of elements or a subset of the population from which samples are drawn. Since it is impossible to have the resources and time (Bryman, 2008) to conduct a survey of the entire communities in FCT, it therefore calls for an effective sample that can represent the population. In view of this, the study population are the area councils, from where the sample frame was generally drawn; instead of the various Satellite Towns as communities within the area councils. In the same vein, the seven built environment practitioners in FCT was where the sample frame was drawn, instead of the whole Country-Nigeria considering the fact that all Nigeria built environment professionals have the right to practice in the nation's capital.

### 4.7 Sources and Procedure for Data Collection.

Secondary and primary sources enabled the researcher collect relevant data needed to address the research question, and in the process foster the empirical validation of the theoretical hypothesis raised in order to achieve the aims and objectives of the study. Particularly, secondary data were obtained from journal articles and online library sources. Other sources include; publications by unilateral and multilateral organizations such as the United Nations Organisation, Common Wealth Association of Architects, International Union of Architects and International Society of Country and Regional Planners. Also publications of Abuja Federal Capital Development Authority, Nigerian Institute of Town Planners, Nigerian Institute of Architects, African Union of Architects, Nigerian Urban Forum, and the Federal Ministry of Housing and Urban Development. News Papers and Magazine were also sourced to gain more information needed to answer the research questions by gauging the views of other commentators.

The primary data used for this research are obtained through questionnaire survey and interviews including pictorial evidences that are physically collected by the researcher. As indicated earlier, a sample frame was used to ensure that the number of questionnaires conducted amongst each segment of stake holders show that every member of the population sample has equal chance of being surveyed. Underpinned by the number of questionnaires sent to each segment stakeholders, a random selection of representatives within each segment was selected to ensure that the data collected is truly representative of the total sample size within each segment, thereby avoiding any data bias. A case study technique was employed to gather detailed information about existing Sustainably Designed Communities as well as the implementation of such designs in Abuja, Nigeria. The Physical Environment Professionals in all the six Area councils were reached during this exercise. Interviews was conducted differently using snow-balling technique, which is a method where a participant recommends another participant until the target sample size is met (Goodman, 1961; Heckathorn, 2002), This technique is chosen because of the inability of the researcher to identify all the key players in the Design and Implementation/development of the Federal Capital master plan and the Territory at large without relying on the few known contacts who are still active in the development of Abuja today.

### 4.7.1 Questionnaire Design and Administration

Two sets of questionnaires designed to ascertain the extent to which Abuja is a City of sustainable communities targeted at residents and built environment practitioners are adapted largely from the questionnaires designed by UNESCO's manual for teaching and learning for a sustainable future – module 17 on sustainable communities (UNESCO, 1997), The Egan Report on Sustainable Communities (Egan, 2004). The UNESCO questionnaire has been adapted and applied in determining the characteristics of sustainable communities and principles of sustainable development across many global cities, hence it was adapted for use in this study.

The researcher administered some of the questionnaires personally, while six trained research assistants, five males and one female, who were closely monitored by the researcher, between the months of March and June 2015, administered some. The research assistants are professionals in the built-environment and were trained for two days on the methodology adopted and thereafter, piloted the test. Each research assistant was detailed to administer questionnaires per Area Council and the researcher coordinated all affairs in all the six Area

Council during visitations. To ensure thoroughness, respondents were asked to complete the questionnaire, and only being assisted in the case of personal disability or illiteracy. All participants were given the same questionnaires in all the Area Councils from which the participants ticked answers as well as state their views/comments as the questions demands, and as thought to be most appropriate.

Two months was initially scheduled for both the administration and collation of the questionnaires sent out. However, it took an additional month to be able to achieve the milestone, due to unforeseen challenges stated in subsequent reporting. However, Gwagwalada and Abaji Area Councils returned the completed questionnaires within two weeks probably due to the determination and interest on the subject matter exhibited by the research assistants deployed to these Area Councils. Questionnaires administered at government offices were more difficult to collate than those administered to other segments such as unemployed, self-employed and students. This is because of restricted access to offices during official working hours.

### 4.7.2 Response Rate

A total of 175 questionnaires were administered to various respondents of which 140 were returned, accounting for 93.3% response rate. It was felt that the high response rate could be attributed to three reasons. Firstly, the interest shown by most of the respondents on the subject matter despite the tensed electioneering campaigns going on at the time, secondly, the approached used in administering the questionnaires whereby engaging research assistants that are knowledgeable in the subject matter as well as good administrative knowledge of the Area Council, covered by each and thirdly, the team work and commitment of the researcher and the assistants.

The questionnaires were administered within the six Area Councils that constitute the communities of the Federal Capital Territory; that includes Abuja Municipal Area Council (AMAC), Abaji Area Council, Bwari Area Council, Gwagwalada Area Council, Kwali Area Council and Kuje Area Council.

**Table 4.7.2 QUESTIONNAIRES ADMINISTRATION F.C.T**

| AREA COUNCIL | NO.OF QUESTIONNAIRES ADMINISTERED | Response Rate |
|---|---|---|
| *Abuja Municipal* | 51 | 35 |
| *Area Council (AMAC) Abuja city* | - | - |
| *Abaji Area Council* | 24 | 23 |
| *Bwari Area Council* | 25 | 22 |
| *Gwagwalada Area Council* | 25 | 24 |
| *Kuje Area Council* | 24 | 19 |
| *Kwali Area Council* | 26 | 17 |
| | **175** | **140** |

## 4.8 Statistical Analysis

Following the quantitative data collection in the first phase, the data analysis from the field survey was performed using the Statistical Packages for the Social Sciences (SPSSx); a data management and statistical analysis tool. The SPSS package was preferred to ensure simplicity and clarity of results. Above all, it facilitates cross tabulation between variables, enhancing graphical analysis of results. Responses were coded, entered and manipulated to produce the descriptive analysis of relationships among the variables that was interpreted and results used as the basis for the qualitative data. The analysis was further conducted on two other levels, bi-variate analysis and multivariate analysis to explore the relationships between variables as will be seen in chapter seven.

### 4.8.1 Univariate analysis

This was the preliminary phase of analysis, also called the single factor analysis employed in this research. It is a method of analysing a single variable at a time to explore the individual

variable for behaviour or performance (frequencies). The frequency distribution analysis was done for all variables to check for the count of occurrence of value within a particular group, assess their agreement with the statement on a scale, and express the results using percentage, tables and graphs (Bar and Pie charts) for all variables investigated for more visual understanding.

### 4.8.2 Cross Tabulation

Cross tabulation is a tabular presentation of data in percentage and frequency forms in order to examine variables for relationships among them. It allows comparison of data from two questions examines relationships for possible explanations and also examines the intersection of the variables involved. As stated by Yolanda (2010-2016), cross tabulation is a statistical tool that allows for analysis of categorical data in order to compare the relationship between two variables. Also, Crouch and Housden (2003) both argued that in using cross tabulation, answers to one question are tabulated against answers to another question and values plotted in one direction and the values of the second variable in the other direction, with totals given as the marginal entries. In this research, variables were cross-tabulated for comparison and in examining relationships between them.

## 4.9 The Interview

The second phase of the data gathering is the qualitative data collection and involved structured and unstructured face-to-face interview amongst the built-environment professionals in the Federal Capital Territory using both judgmental and snowballing techniques. In-depth interview is a technique for qualitative data gathering (King and Horrocks, 2010) and it is a way to obtain information and understanding of issues relevant to the general aims and specific questions of a research project done on a face-to-face encounter or by telephone (Gillham, 2000; Babbie, 2010).

While quantitative research deals with numbers and measurements, qualitative deals with understanding behaviour (RSDU, 2011), gives richer answers to questions, valuable information and probe issues (Gillham, 2000). In addition, it is a form of enquiry that analyses information conveyed through language and behaviour in a natural setting (Berkwits and Inui, 1998). For the purpose of this research, the face-to-face technique was adopted and carried out solely by the researcher using the voice recorder with the permission of the interviewees and also making notes using pen and paper. Further taken into consideration was

the interview settings and the body language of the interviewees. This method was preferred because it afforded the researcher the opportunity to interact with the professional players in FCT; and gather reliable and valid data relevant to the study. Interaction with this target group gave an in-depth insight and knowledge of their reactions to issues raised, and at the same time understands their experiences and the meaning they attach to their experiences (Siedman, 2006).

### 4.9:1 Sample size and Interview Process

A sample size of sixty interviewees, using non probability sampling of purposive and snowballing methods was appropriate for the seven built- environment groups, that is, sixteen Architects, twenty-four Engineers, ten Builders, six quantity surveyors, three Town Planners and one Estate Surveyor. Although no Land surveyor granted audience to the researcher for interview, the size and the spread are considered to be large enough to truly represent the built-environment professionals in both the public and private practices in the Abuja, the Federal Capital City of Nigeria. This segment of the residents in FCT were specifically targeted for the interview because they play key roles in planning, designing, development, modelling and remodelling of the Federal Capital Territory; which is the research field.

**Table 4.9.2 Structure of Interview**

| **Professional** | **No. Interviewed** | **Sector of the Built-Environment** | **Sampling method** |
|---|---|---|---|
| Architect | 16 | Architecture | 6 Judgmental |
| | | | 10 Snowballing |
| Engineer | 24 | Engineering | 4 Judgmental |
| | | | 20 Snowballing |
| Builder | 10 | Building Construction | 3 Judgmental |
| | | | 7 Snow balling |
| Quantity Surveyor | 6 | Quantity Surveying | 1 Judgmental |
| | | | 5 Snow balling |
| Town Planner | 3 | Town Planning | 1 Judgmental |
| | | | 2 Snow balling |
| Estate Surveyor | 1 | Estate Surveying | 1 Judgmental |
| | | | |
| Land Surveyor | NONE | Land Surveying | |

The interview was carefully planned and questions drawn from the environmental aspect of sustainable community development. Questions covered the suggested strategies adopted by

practitioners for achieving sustainable community development; these are: Programming for Development, Planning strategies for reducing Environmental Impacts, planning to conserve Natural Environment, Community and Site Design Strategy, Planting Vegetation, Building Configuration and Design Configuration, Design for physical comfort and safety, Building Component Selection and Construction strategies. Interviewees were asked to say YES or NO to the application of the suggested strategies, in their professional practices in the Federal Capital Territory. If the answer is YES, the researcher further probed the interviewees on identification of issue(s) considered while applying each affirmed strategy. Prior to the interview, the researcher, during the context literature review and questionnaire survey thereafter, had identified some Built-environment professionals and discussed the possibility of having interview with them; those who were willing were later contacted on phone to agree on possible dates.

The interviews were mostly conducted in the interviewees' offices except for five, who choose to have the interview conducted in the researcher's office. Appointments were confirmed days prior to the interview to re-affirm the scheduled appointment. The encounter throughout the interview sections with the professionals were truly revealing and worth the effort put into the exercise.

**Figure: 4.2. Pictures of Interview Session with Respondents**




## 4.10 Experiences during Field Study

The reason for documenting my field experience is to give future researchers in this field a 'head start' to avoid possible pitfalls. It may inform their data collection strategy and may enhance their resilience and temper their frustrations with disappointments inevitable when gathering primary data. One of the major tasks bordered on having to make several journeys to all the Area Councils in order to administer questionnaire to respondents, take photographs as well as coordinate the activities of the research assistants sent to the research field. This was because of the electioneering campaigns going on at the time, the insecurity situation at the time and high cost of petroleum to fuel the vehicle used for transportation. This implies that repeated visits had to be done in order to get enough respondents. This also implied more financial cost implications and risks owing to the tense security challenges the country was

faced with at the time. More funds were needed than budgeted as this thesis was funded-privately by the researcher.

Another problem encountered was the inability of the research team to retrieve filled questionnaires on agreed dates by some respondents, especially from Kuje Area Council. This was due to the bomb blast that occurred at the time of fieldwork in Kuje that devastated the social strata of the community. Meanwhile, Abuja municipal area council, Bwari area council and Kwali proved difficult with regards to the retrieval of filled questionnaire from respondents, as they were either not in their offices or were in a meeting or did not show up. In addition, administrative bureaucracy denied access to some respondents. However, most of the questionnaires were retrieved after several visits, following several phone calls and attendant visits. The interview sections were time consuming as most interviewees vied-off the subject matter to discuss unrelated issues. As a result, the researcher had to reschedule for another section in other to complete an interview.

Most respondents and interviewees in all the area councils visited were quite receptive and keen on the subject matter; however, few required reassurance and persuasion before agreeing to complete the questionnaires, while getting a firm-up interview appointment with professionals was quite tasking. This is arguably due to the electioneering activities going on at the time of the fieldwork, breeding suspicions as to the reason for the survey during the general election period.

Generally, the experience was an interesting one as it afforded the researcher the opportunity to visit all the area councils of FCT, and have first-hand information on the communities socially, environmentally and economically too; also to confirm the findings from the literature. Interestingly too, the researcher's encounter with the Built-environment professionals; during interview sections were most enriching to the research fieldwork.

### 4.11 Ethics

The ethics approval form as required by the research committee of the De Mont-Fort University was completed and submitted for approval. This was used as guiding compass in the application of the methods of data collection. The researcher guarantees participants' anonymity during the surveys and interviews sessions. It is also instructive to note that, the researcher did not coerce or force any participant respondent to take part because voluntary participation is key to any unbiased research. To ensure this, the researcher supported all

enquiries with a letter informing potential participants that they should only participate voluntarily and can terminate interviews or refuse to complete questionnaire surveys at any time. Also, permission was sought before photographs were taken. All these modalities and measures and their implementation was targeted at meeting the approval standards of the Faculty's Ethical Committee as stipulated.

## 4.12 Summary

This chapter effectively outlines a detailed analysis of the epistemological underpinning and relevant methodological approaches identified as suitable for gathering data and information needed to answer the research question and achieve the stated research objectives. Particularly, it touched on the relevance of epistemological and ontological positioning to the research, indicating the processes through which knowledge is acquired. It further stressed that, the epistemological position adopted for this study was identified as the constructivist epistemological position on the basis that whilst the real world exist, views and interpretations of meanings could also be influenced or shaped by other realities. Underpinned by this therefore, the notion of a single method of scientific research was rejected for the adaptation of multiple useful methodologies which necessitated the adoption of triangulation or mixed method approach for the research. This was demonstrated in this case particularly because the main purpose of this study is to develop a conceptual framework to guide architects and other built environment professionals in the urban design of Abuja City into a 21$^{st}$ century City of sustainable communities. Therefore, only the breadth and depth allowed by the mixed-method of research will yield the critical data and necessary information including extant of new knowledge for such a conceptual framework to be achieved. Chapter 5 presents the analysis of the empirical data for this study

# 5.0 CHAPTER 5: ANALYSIS OF SURVEY DATA ON FCT

## 5.1 Introduction

This chapter focuses on the socio-economic characteristics of respondents in this research and reveals the template used to evaluate the sustainability of a designed community. It is a vital aspect of this research because sustainability emphasizes a holistic approach to development issues and problems across a diverse section of any society. Also, the characteristics of participants are quite important, as they reveal various credentials of participants, allowing readers to decide the extent to which they can be influenced by results, conclusions and recommendations drawn from the study.

The researcher administered a total of 175 questionnaires of which 140 were returned, accounting for 93.3% response rate. The return of completed questionnaires is considered to be very high, considering the fact that it was normally unusual to receive such high number of returns during field research work. It suffices to mention that much lessons have been learnt from previous field efforts that were built into the design and implementation of the questionnaires in the six Area Councils in Abuja that constitute the communities of the Federal Capital City such as; Bwari Area Council, Kwali Area Council, Abuja Municipal Area Council, Gwagwalada Area Council, Abaji Area Council and Kuje Area Council.

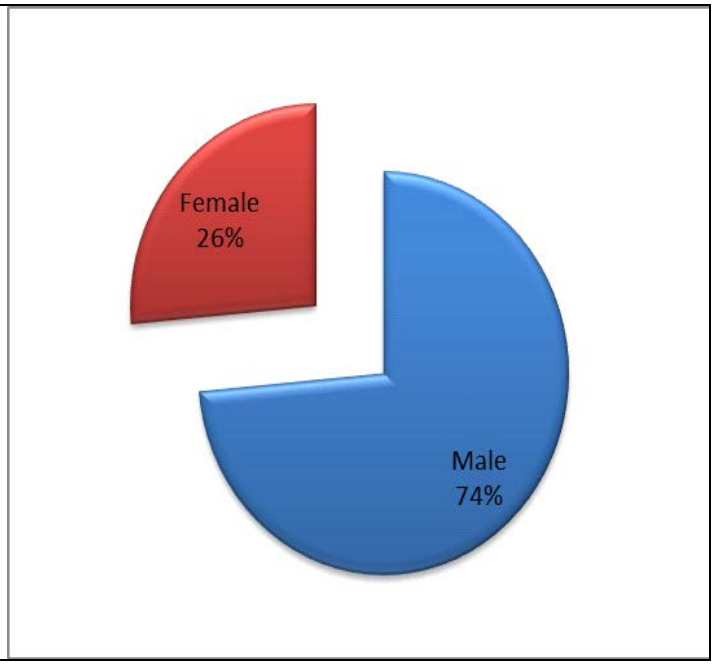
## 5.2 Characteristics of Respondents

This segment begins with a look at the gender characteristics of respondents. This creates the necessary understanding of the adequate representation of the gender make up of those that participated in the field research. This is due to the fact that wider participation by all stakeholders is a necessary ingredient to sustainable community development as argued by Roseland (2000), reflecting the well-established gender dimension to the concept of sustainable development in general. Often times, the issues with a top-down approach to sustainable development, are not only limited in scope for wider participation, it is observed that women, who happens to be amongst the most vulnerable members of any society, have little input. Therefore, the data shown both Figure 5.1a, suggests that the male participants have once again dominated in the exercise proving the inevitable with males' participants put at 74% while females were 26%. Although, this is consistent with previous observations made in this survey and other studies stating that female participation lags behind men, but it is vital to mention the efforts made to ensure an increase in female representation during the

survey. Clearly the 26% that is recorded as representing the percentage of women who participated in the survey is considered to be a major improvement. This is because of the predominant socio-cultural issues that prevail amongst the sample population partly because of cultural dictates were men were easily accessible and were willing to participate as compared to women who were less accessible.

**Figure 5. 2a** **Gender Composition of Respondents**

| **Gender** | Frequency | Percentage |
|---|---|---|
| Male | 103 | 73.6 |
| Female | 37 | 26.4 |
| Total | 140 | 100 |

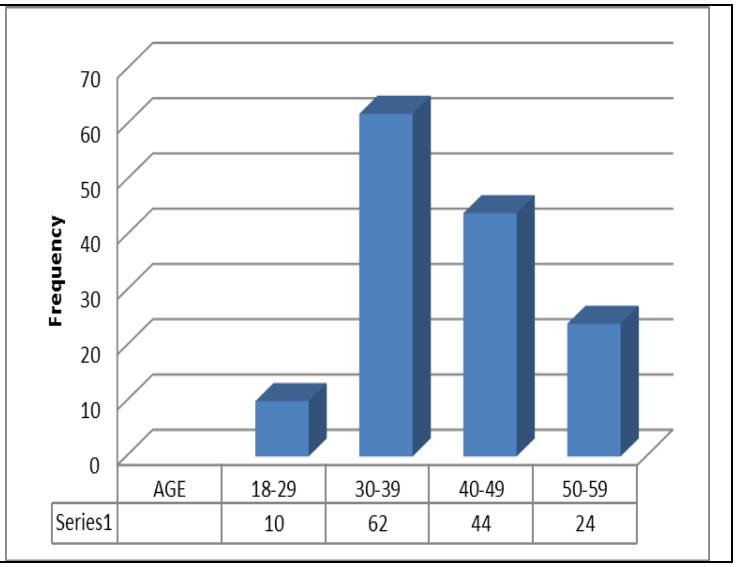



### 5.2b Age Distribution of Respondents

Figure 5.1b above reveals the age range of respondents which falls within 18 – 59 years. Participants that fall within ages 18 to 29 parameters constitute 7% of the total number, while those between the ages of 30 to 39 dominated the exercise with 44% representation. However, participants between the ages of 40 to 49 represented 31% of the total number while those between 50 to 59 years accounted for 17%. Therefore, the age representations fall within the expectations of the researcher because Abuja Federal Capital City is a new city where about 20% of the total physical landmass has only been built so far. One implication of this is that the young and most active labour force is most attracted to the city from different parts of the country. The fact that those of retirement age live away from the city to escape the tumultuous lifestyle also explains the predominance of the most active population in the Capital City.

**Figure 5.2b** **Age Composition of Respondents**

| AGE | frequency | percentage |
|---|---|---|
| 18-29 | 10 | 7.1 |
| 30-39 | 62 | 44.3 |
| 40-49 | 44 | 31.4 |
| 50-59 | 24 | 17.1 |
| Total | 140 | 100 |




## 5.2c Education Attainment of Respondents

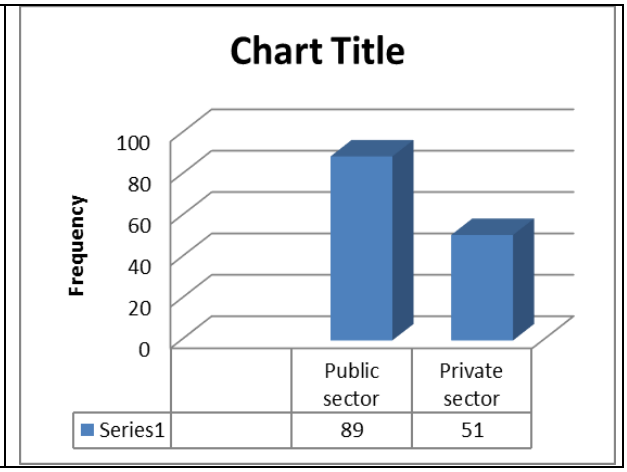
The educational characteristics of the survey participants reveal that 74% of respondents are university graduates, 19% are tertiary education graduates and 2% have basic elementary education. This agrees with the nature of Abuja, as a young city attracting young professionals. The educational characteristics of respondents further shows the quality of respondents to the survey, being those able to understand the purpose of the survey.

## 5.2d: Employment Status of Respondents

Regarding employment status, Figure 5.1d shows that 64% of respondents are public sector employees, while 36% work in the private sector. This is expected because Abuja represents the administrative capital of Nigeria thus there is the predominance of public sector employment, and this is significant given that majority of respondents are involved in the administration of the various communities that make up Abuja Federal Capital Territory (FCT). In other words, they are actively and variously involved in managing the affairs of Abuja. This is a further proof about the quality of respondents who participated in the survey.

**Figure 5.2c** **Employment Status of Respondents**

| EMPLOYMENT | Frequency | Percentage |
|---|---|---|
| Public sector | 89 | 63.5 |
| Private sector | 51 | 36.4 |
| Total | 140 | 100 |

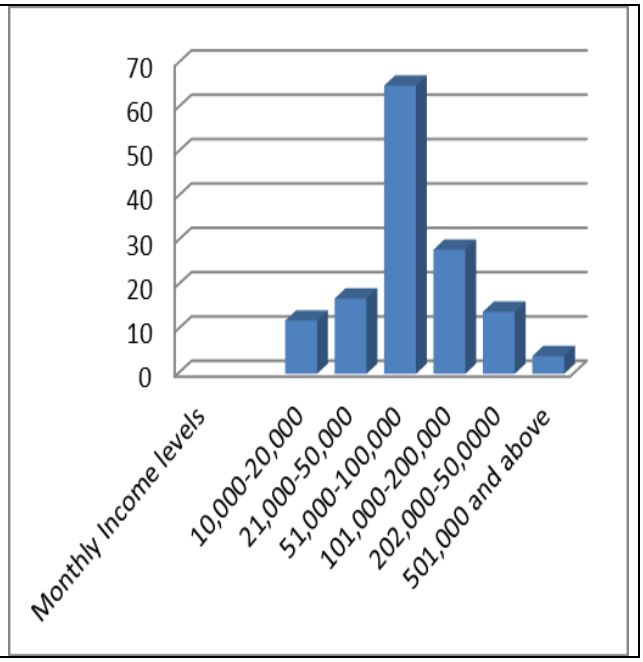



### 5.2d Income levels of Respondents

According to Figure 5.1e, the monthly income levels of the respondents vary, out of the total 140 participants surveyed 7% earn between ₦10,000.00 to ₦20,000.00; 12.% earn between ₦ 21,000.00 to ₦50,000.00 naira monthly; 46% earn between ₦51,000.00 to ₦100.000.00. Also 20% earn between ₦101,000.00 to ₦200,000.00; 10% earn between ₦202,000.00 to ₦500,000.00 monthly; whilst 3% of the survey earn above ₦500,000.00 monthly. This suggests that a good majority of participants earned a monthly salary ranging from ₦51, 000.00 to ₦100, 000.00 which is the equivalent of $254 to $508 per monthly as at November, 2015. The significance therefore points to the fact that respondents cut across all income range, indicating a good spread of representation of the variations income groups in Nigeria in our survey.

**Figure: 5.2d Income Distribution of Respondents**

| MONTHLY INCOME LEVELS | Frequency | Percentage |
|---|---|---|
| 10,000-20,000 | 12 | 8.6 |
| 21,000-50,000 | 17 | 12.1 |
| 51,000-100,000 | 65 | 46.4 |
| 101,000-200,000 | 28 | 20 |
| 202,000-50,0000 | 14 | 10 |
| 501,000 and above | 4 | 2.9 |
| Total | 140 | 100 |

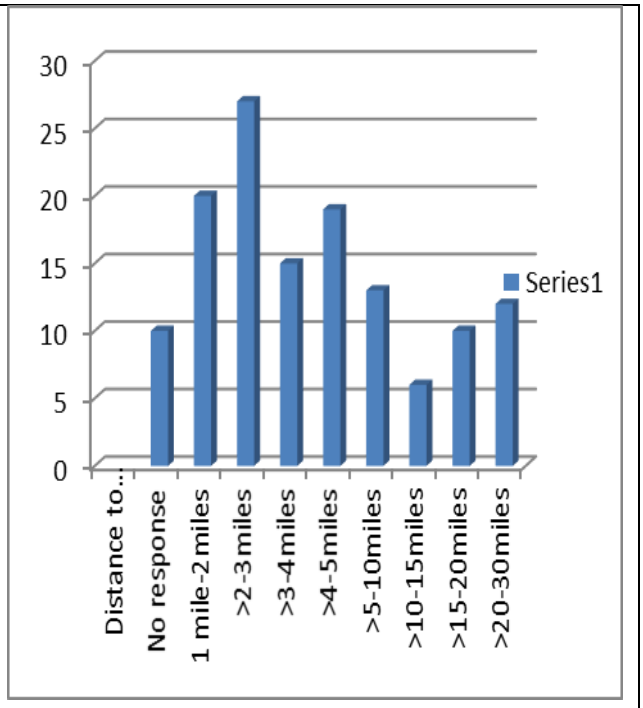



### 5.2f: Distance Travelled to Work:

The journey distance which residents travelled to, and from work daily has quite a huge implication for the natural environment, particularly in the area of environmental pollution and also reflects the ecological footprints of the urban environment. As Figure 5.1f shows, this ranges from between 1 mile to 30 miles, a detailed look at the breakdown shows that 14% travel between 1 and 2 miles daily to work; 19% travel 2 - 3 miles daily to get to work; 11% travel between 3-4 miles daily to work while 14% travel 4-5 miles to work. Additionally, 9% travel between 5-10 miles, 4% travel 10 – 15 miles; 7% travel between 15-20 miles while 9% travel between 20 -30 miles daily to work. While 65% of respondents travel between 1-5 miles to work, about 20% of respondents travel between 10 to 30 miles to work, and this has major implications for the ecological footprints of FCT, particularly urban sprawl.

**Figure 5.2f** **Distance Travelled to and from Work**

| DISTANCE TO WORK | Frequency | Percentage |
|---|---|---|
| No response | 10 | 7.1 |
| 1 mile-2miles | 20 | 14.3 |
| >2-3miles | 27 | 19.3 |
| >3-4miles | 15 | 10.7 |
| >4-5miles | 19 | 13.6 |
| >5-10miles | 13 | 9.3 |
| >10-15miles | 6 | 4.3 |
| >15-20miles | 10 | 7.1 |
| >20-30miles | 12 | 8.6 |
| Total | 140 | 100 |



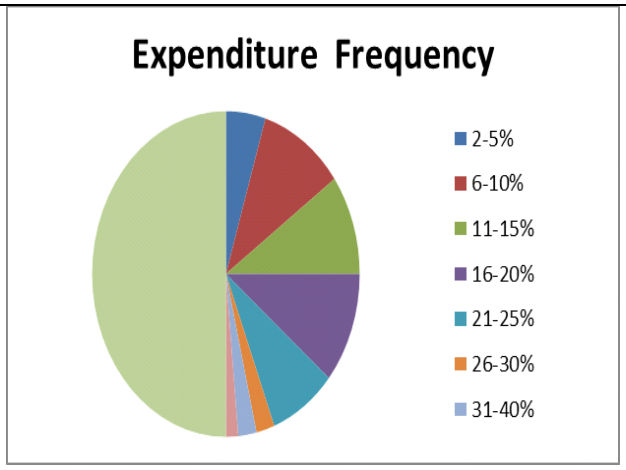

Furthermore, after the cross-tabulation of the income variable with the distance travelled variable as shown in Table 5.1 in Appendix ii, it suggests that while 72% of low income earners travel between 1-2 miles to work, 18% of them travelled between 3 to10 miles. This is at variance when compared to the 23% of middle income earners that travel between 2-3 miles to work or the 35% of the upper middle income earners that travel between 2-4 miles to work or indeed, the 50% of the highest income groups that travel only between 2 and 5 miles to work. Again, these findings agree and are consistent with suggestions in the literatures were the poor living in the outskirts of the city and on marginal lands tends to travel longer distances, and as a result, devotes greater proportions of incomes to travel. This is particularly the case where transport facilities and connectivity are inadequate. The implications are wide ranging, partly is the huge effect of further deepening urban poverty lines, owing to restrictive travels which promotes inequality of access between the poor and rich, and the outcome of urban opportunities. This is particularly the case with employment search and accessing urban amenities.

### 5.2h Percentage of Monthly Income Spent on Transportation to and from Work

The percentage of income devoted to transportation reflects the distance travelled to work, and more so, has implications for the consumption of other goods and services, particularly housing and attendant issues of maintenance and affordability especially for the low income earners. As Figure 5.2 shows, 21% of respondents devote 16% to 20% of their income on transportation; 20% of respondents spend 6% - 10% of their income on transportation. Furthermore, 19% spend 11-15% of their total income on transportation. Similarly, transportation accounts for 21 - 25% of the income of 15% of respondents. However, 8% of respondents spend more than 30% of their income on transportation to work. On average, majority of respondents spend between 10-25% of monthly income on transportation, and as already explained in Table 5.1 in appendix ii, low-income earners predominate amongst households that spend between 10% and 20% of their income on transportation owing to the relatively longer distance travelled to work, and also with regards to accessing urban amenities given their locations.

**Figure: 5.2 Expenditure on Transport in FCT**

| Expenditure | Frequency | Percent |
|---|---|---|
| 2-5% | 13 | 9.3 |
| 6-10% | 28 | 20.0 |
| 11-15% | 27 | 19.3 |
| 16-20% | 30 | 21.4 |
| 21-25% | 22 | 15.7 |
| 26-30% | 6 | 4.3 |
| 31-40% | 6 | 4.3 |
| 40% and above | 4 | 2.9 |
| missing | 4 | 2.9 |
| **Total** | **140** | **100** |




### 5.3a Questions on Identified Sustainable Community Development.

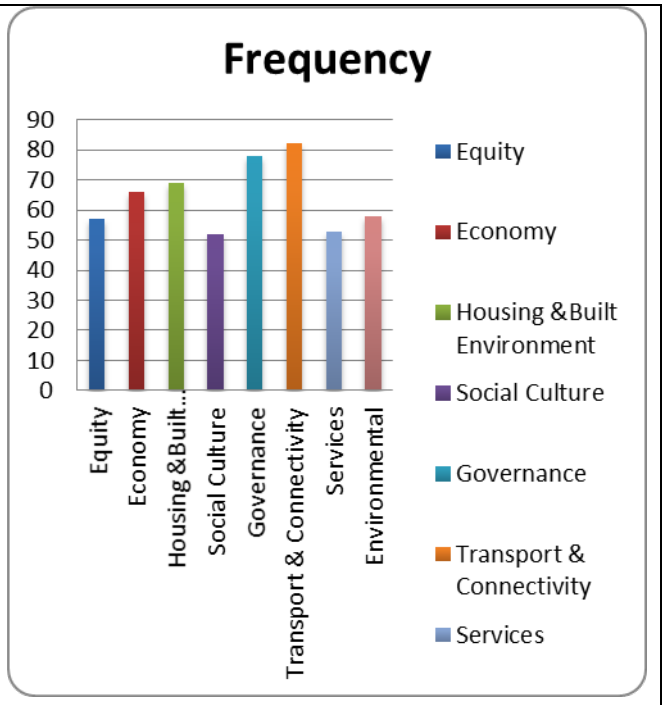
On the other hand, section B of the questionnaire is designed to determine the participants' knowledge and awareness about sustainable community issues, particularly the elements. In all, this part contains four major questions and the responses are presented accordingly. The first question required participants to choose six out of the eight aspects of sustainable

community most important to them, and to provide valid reasons for the choices they have made. Figure 5.3a reveals the aspects of sustainable community chosen by respondents. Evidently, 11% identified equity as important, 13% identified the economy, 10% identified social culture as most important, while another 13% identified housing and built environment as vital to them. Furthermore, governance and transport and connectivity accounted for 15% and 16% respectively; 10% and 11% of respondents chose services and the natural environment respectively as the most important aspects of sustainable community.

While other attributes featured in respondents' 'wish-lists', it is governance and transport including connectivity proved to be the two most important aspects of sustainable community identified by respondents. The reasons adduced for the personal importance attached to selected attributes seems to converge a lack of services, particularly housing, transport and connectivity, and more fundamentally, increasing inequality of income and opportunities that Abuja FCT has to offer.

**Figure: 5.3a** **Identified Aspects of Sustainable Community**

| Aspect of sustainable community | Frequency | Percent |
|---|---|---|
| Equity | 57 | 11.1 |
| Economy | 66 | 12.8 |
| Housing &Built Environment | 69 | 13.4 |
| Social Culture | 52 | 10.1 |
| Governance | 78 | 15.1 |
| Transport & Connectivity | 82 | 15.9 |
| Services | 53 | 10.3 |
| Environmental | 58 | 11.3 |
| **Total** | **515** | **100.0** |
| | | |



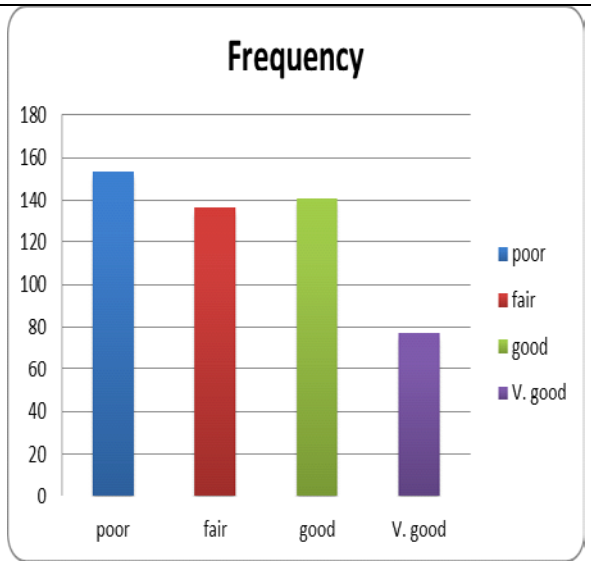

### 5.3b: Rating of the Federal Capital Territory

Following from 5.2a above, participants were asked to rate their communities on the six aspects selected, and explain such rating by identifying the strengths and limitations of their

communities on each of the aspects selected. As Figure 5.3b indicates, only 15% of participants rated Abuja as very good, 28% perceive it to be good, while 27% believe it to be fairly good. However, 30% of participating respondents perceived Abuja as poor relative to their chosen or identified attributes. This interestingly may come as no surprise given the individual experiences that may have informed the attributes of sustainable community selected. This outlook suggests that aspects of sustainable communities identified in FCT are not highly rated. Furthermore, the strengths and limitations of the ratings as suggested by respondents are also captured in Table 5.4 in appendix ii.

**Figure: 5.3b Rating of the Identified Aspects of sustainable community**

| **Rating** | Frequency | Percent |
|---|---|---|
| Poor | 153 | 30.2 |
| Fair | 136 | 26.8 |
| Good | 141 | 27.8 |
| V. good | 77 | 15.2 |
| **Total** | **507** | **100.0** |




## 5.4 Policies and Actions by FCT to Address Identified Aspects of Sustainability Development

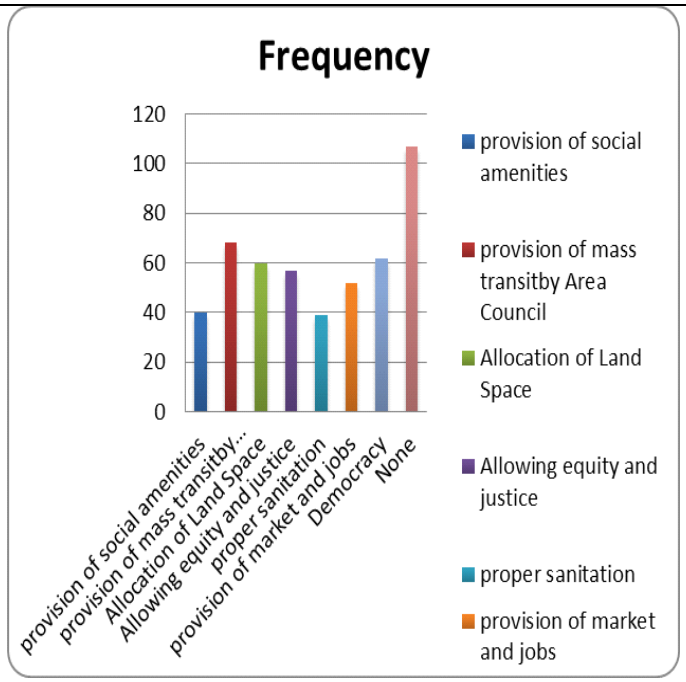
The policies and actions being undertaken by FCT administration to address these six aspects of sustainable community in FCT are captured and displayed in Figure: 5.4a. Though 8% of the respondents surveyed attested to the provision of social amenities as being the policy and actions adopted by FCTA to address the aspects identified, only 14% of respondents indicated the provision of mass transit. Meanwhile, 12% of the total participants attested to the allocation of land spaces in FCT as the government action and policy being undertaken to address the identified aspects of sustainable community. On the other hand, 12% of the participants suggested that allowing equity and justice to reign in government policy and action designed to address sustainable community aspects in FCT was quite vital to them.

Furthermore, the table and Figure also revealed that 8% of the total participants suggested proper sanitation as vital, while 11% suggested the provision of market and jobs as central to their well-being. Also, allowing for democracy to take place within Abuja was identified by 13% of the participants as important elements of government policy and action needed to address aspects of sustainable community. It is surprising however that, 22% of the total participants surveyed do not identify any policy and action of government being undertaken to address these six aspects of sustainable community.

Generally, therefore, the outcome of the survey suggests that there is a lack of satisfaction with FCTA policies and actions towards addressing the stated aspects of sustainable community development in the territory. This is revealed by the 22% of participants who cannot identify any government initiative and policy that is focused on addressing various aspects of sustainable community in the territory. Therefore, it calls for the redesigning of key policies and actions on the development of the capital territory toward achieving sustainable community design and development.

**Figure: 5.4a Identified Policies and Actions by FCT to Address Aspects of SD**

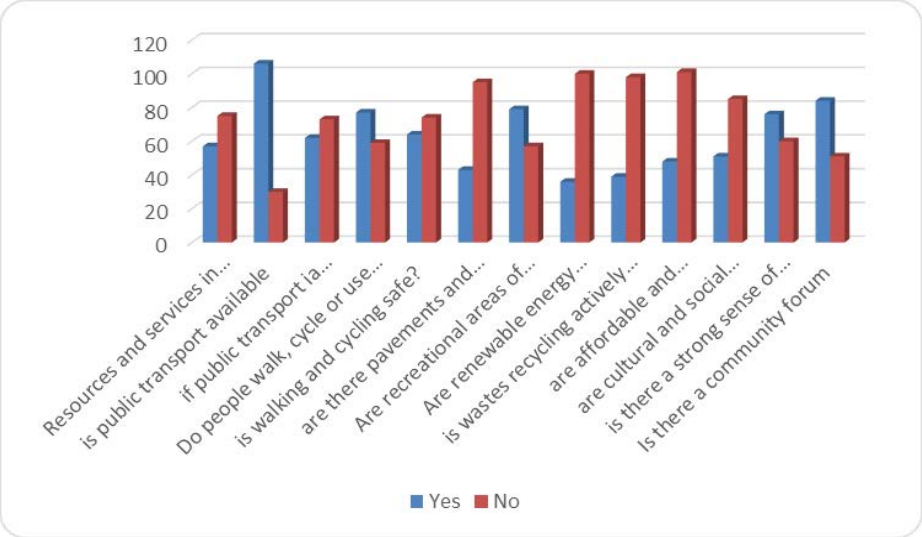
| Government Actions | Frequency | Percent |
|---|---|---|
| Provision of social amenities | 40 | 8.2 |
| Provision of mass transit by Area Council | 68 | 14.0 |
| Allocation of Land Space | 60 | 12.4 |
| Allowing equity and justice | 57 | 11.8 |
| Proper sanitation | 39 | 8.0 |
| Provision of market and jobs | 52 | 10.7 |
| Democracy | 62 | 12.8 |
| None | 107 | 22.1 |
| Total | 485 | 100.0 |



## 5.5 Key Features Sustainable Development Available in FCT

In **5.4b** the participants were presented with important features of a sustainable city and asked to identify the ones they can relate to in Abuja Federal Capital City. As shown in Table 5.4b in Appendix ii and Figure 5.4b respectively. And Figure 5.4b, a detailed glance of the extent to which Abuja can be said to have fulfilled the benchmark criteria for a sustainable city is presented. For example, while 78% attests to public transportation as a key feature of a sustainable city present in Abuja Federal Capital Territory, majority of 54% decried reliability, safety, and regularity of services.

**Figure 5.4b Availability of Key Features of Sustainable City Available in Abuja**




Closely related to the above, while 57% percent of people walk, cycle or use public transport rather than the energy inefficient and polluting public and private car mode of transportation, 69% of respondents bemoaned the lack of pavements and cycle routes to indicate that the mere presence of these indicators may not be a sufficient reason to conclude that the city may necessarily be sustainable, as a result. Abuja is also lacking in areas like; the use of alternative energy sources as substitutes for conventional energy generation sources; 74% of participants cannot find existing policy initiatives which are directed at mainstreaming alternative energy sources to urban life. The same problems arise when you look at the recycling of urban wastes with 72% not able to point to any government initiative in this direction which is clearly detrimental to the City's sustainability drive. Similarly, 68% of respondents pointed to the lack of affordable and autonomous homes accessible to low income households. Also, while a sizeable majority, 62% agree there is a community forum

in their localities, 44% do not believe there is a strong sense of community identity and belonging.

### 5.6 Local Solutions to Sustainable Community Development Problems

Sequel to the above, series of open ended questions were asked to gain further insights to residents' awareness of the attributes of sustainable community development as a concept. Interestingly, one of the benefits of open ended questions is that they yield spontaneous answers that reflect the participants thinking on the subject matter at the time of the interview (RePass, 1971). In other words, it has the capacity to open the inner thoughts of the participants in the survey about the topic been discussed and allows for the expression of immediate feelings on the topic. To this end, a series of open ended questions (Q5 to Q17) were put to FCT respondents, resulting in fascinating opinions being offered, many of which expressed by residents.

Question five seeks to know what participants would advise local governments (Area Councils) to do about conditions in the six satellite towns that form part of Abuja, particularly the squatter settlements, wearing the hat of the Minister for the Federal Capital Territory. They responded overwhelming and agreed that the Local Governments should open up the local areas by providing basic infrastructures and services, and prominent amongst such services are "liveable accommodation, standard schools, hospitals/health clinics/health care centres, and portable water supply facilities". They also pointed out the need to carry out extensive slum upgrading, and to embark on sensitizing various interest groups in the Area Councils on the need to abide by the Federal Capital Territory regulations relating to housing and urban development. In addition, participants were very clear on how to procure these facilities by emphasizing the need for Area Councils to partner with the private sector, including non-governmental organisations (NGOs), as the most effective strategy for delivering these infrastructure and services at the quantity and speed they are required.

In the case of Question six, it specifically addressed the issue of water scarcity in Abuja, and as shown in Figures 3.10 and 3.11, water scarcity is acute, inviting huge social consequences which often fall on the most vulnerable, which are usually women and children. A decentralized approach was favoured by participants, and the provision of communal boreholes was also suggested by residents where they can collect water. Once again, partnership with the private sector was much favoured by respondents as a delivery strategy.

Furthermore, a few respondents considered the rehabilitation and construction of more dams in FCT, alluding to centralized services where water is piped to every resident. A small number of respondents see good governance as key to infrastructure and service provision; arguing that it is the only way the technical and financial support can flow into the country in aids or foreign direct investment.

Furthermore, a guaranteed equality of access and outcome of health care facilities are key attributes of a sustainable city, and question 7, with regards to the emphasis of the concept of sustainable development on participatory decision making and development, residents were asked of their opinions on how to improve local health conditions. In particular, they were requested to identify who they may look to assistance on health development matters and why across local, national, or global actors. The reason for this is to gauge respondents understanding of not just the problems but ideas of who has the responsibility to ensure these services are available at affordable costs at the point of needs.

The participants overwhelmingly agreed that the provision of healthcare facilities are critical responsibilities of the government at all levels, however, they hold the view that the government, relative to the scale of the demand, cannot fulfil the task without partnering with the private sector. The one aspect of healthcare that there was a unanimous agreement by participants was the need for it to be accessible and affordable. They also emphasised proactive advocacy, believing that the sanitization of hygienic practices is not only an important elements of any healthcare facilities, particularly, it is relatively economical. In this regards, respondents decried the silos approach to health care provision and insist on an integrated healthcare provision mechanism, with households playing major roles. Furthermore, respondents hold the view that lack of capacity and capacity building framework requires that local, national, and multilateral and unilateral organisations have important roles to play in delivering health care and facilities to communities.

On housing, question 9 asked residents to assume the role of the Minister of the Federal Capital Territory and identify the practical steps they would take to address the acute housing problems in Abuja and this approach, interestingly yielded some very interesting results. The overwhelming majority indicated the need for the government to determine the housing needs of the people before implementing any physical development, and the reasons advanced were unanimous that the government, in granting planning applications, should emphasise as part of the planning gains, affordable housing. As current practices indicate, low-income

households are becoming ‘rare breeds’ in almost all of the developed areas of the Federal Capital Territory with the rents for the supposed most affordable of all houses going more than a thousand times the minimum wage rate. This concentrates affluence and poverty into two different and opposing parts, rendering interconnectivity and social capital difficult to build. This is at complete variance with the core values expressly contained in the Abuja Master Plan and rightly captured by both Ikoku (2004) and Mabogunje (2001).

Also related to the above is the view that the government should subsidise land, building materials, promote alternative building materials, and the need to use direct labour to deliver affordable housing featured prominently in the responses from participants. Similarly, the provision of basic infrastructure across the territory, according to the respondents, will greatly reduce transaction costs, particularly those relating to house building in the territory. For example, poor road infrastructure to some areas increases transactions costs of delivering materials and labour to such areas. Also, a significant proportion of survey participants pointed to the inability of the authorities to enforce existing housing rules and adapt policies to rapidly changing circumstances. In particular, some respondents highlighted the practices where developers submit proposals for low-cost housing and allocated government lands that are later converted to building luxury apartments far above the reaches of low-income households.

Finally, participants pointed out the need to pursue housing policies using the ‘carrot’ and ‘stick’ approach were economic incentives are complimented by legal force to compel developers to work within existing urban rules and regulations. They also pointed out a need to implement rent controls which must not exceed certain ceiling and this was suggested by a third of the participants. The need to also reduce mortgage rates from the current average of 30%, considered to be one of the highest in the world, was also suggested by more than half of the participants.

Question 10 focuses on what role would be expected, as a Minister of the Federal Capital Territory, is expected of residents in solving their immediate physical environmental and social problems. The overwhelming response was that residents should organize and build up the capacity to effectively respond to government initiatives on urban development. In the same vein, respondents opined that residents should be made to engage, contribute, and take ownership of urban policies and programs. In particular, they would expect residents to abide

by urban regulations and laws, and build the critical social capital critical to the functioning of a sustainable city.

In the case of Question 11, it sought to prompt the various participants to articulate, if they were the government Minister responsible for the Federal Capital Territory, which other stakeholders apart from residents, should be involved in solving urban problems. The Sustainable development was emphasised on stressing participation and participatory development by all stakeholders, particularly the view that the poor and the needy are better placed to articulate their needs rather than officials. Hence it is important to adopt bottom-up approach. While all respondents recognized the role of governments in meeting their urban needs, the further roles of non-governmental multilateral and unilateral organisations were recognized, as inevitable to augment governments' efforts. The private sector's role is also considered critical to government efforts; bring in management experience and capital inflow to the urban realm. Interesting enough, respondents recognized the crucial role for traditional rulers and local chiefs in helping to sensitise citizens generally, and their subjects in particular on policy implementation.

Participants were required to identify the obstacles they might encounter in the course of building a sustainable city and how they would deal with these obstacles in Question 12. It should be noted that this is in line with the bottom-up approach implicit in the concept of sustainable development. Overwhelming majority of participants identified lack of finance, inadequate energy supply, disregard for rules and regulations, prevalence of inequity in urban opportunities, lack of consultation and involvement in governance in general, and urban planning decisions in particular. Others include the extensive bureaucracy, top-down approach to urban management, lack of awareness of urban laws and regulation born out of lack of sensitization of citizens.

As regards the way they would address these challenges; participants were very clear on what they would do, if they were the Minister of the Federal Capital Territory. A large majority of respondents rated the engagement of residents in urban planning and creating an enabling environment for an effective participation in urban matters very highly. Equally, a sizable number would encourage urban forums established in every ward of FCT and a mechanism put in place for a quarterly "town hall meetings". Regarding the lack of adequate and effective infrastructure and services, majority of respondents would invite in other stakeholders – private sector, voluntary organisations, and religious organisations to

participate in key infrastructure provisions. However, a majority of the survey participants would like to manage the process by which other stakeholders get involved in urban provisions for reasons of economies of scale, quality assurance, and to avoid fragmentation and duplication of infrastructure and services.

In Question 13, participants were asked of their views and opinions on their local environment and what they would do, if there were concerns about local development plans. This question was aimed at determining local capacity and knowledge of how to engage governments and officials on urban development matters. More than half of the participants said they would embark on advocacy, sensitization of residents, and form a local pressure group and engage the Federal Capital Territory. Question 14 continues this line of thinking by asking residents what they would do, if their efforts to influence local plans to their favour fail. They suggested more advocacy, documented opinions to be sent to appropriate authorities, seek interface meetings with the Minister in charge were measures favoured by the majority of respondents. However, a few opted for the legal route, indicating that, where their representation fails, they will go to Court for an order to compel local authorities to act on their concerns.

Furthermore, Question 15 sought to find out what participants would like their communities to look like regarding physical attributes that will create liveable and enjoyable environments. The overwhelming majority of them suggested that they would want to see and live in a sustainable city defined by its beauty and liveable physical space, ultra-modern and integrated, safe and well serviced, environmentally and socially sustainable, and above all affordable. These responses are not surprising considering the fact that people would generally want a decent place to live in.

In the case of Question 16, the researcher aimed at understanding how households view the perennial problems of solid wastes, asking the particular actions they would want taken to deal with the garbage problems in their neighbourhoods. Again the issue of sensitization comes to the fore, with a significant proportion of respondents indicating that a mass awareness program on waste disposal and littering is critical to garbage pill-ups and attendant health problems. Similarly, respondents were unanimous on having an effective systems and strategies for solid wastes collection and recycling, pointing out that the irregular collection of wastes or the lack of central location for waste disposal largely accounted for the ‘fly-tipping’ shown in Figures 3.11 and 3.13.

Respondents indicate that each local council area in FCT should have no less than 5 waste recycling and management facilities, indicating that they are unaware where solid waste recycling facilities, such as waste incinerators, are located in their area council. Overall, most respondent see the government, as part of the problem in the sense that the government is unrealistic believing it can deal with solid wastes problems alone. They hold the view that they would like to see governments partner with the private sector to deal with garbage problems in FCT. In particular, more than half of respondents believe that waste management presents huge employment opportunities in FCT communities.

In the case of the garbage dump, residents who were participants suggested various uses to which the reclaimed land can be put. An overwhelming number believed that such sites have specific uses in the Abuja Master Plan and should be used accordingly. However, such sites were not zoned for specific uses, which they very much doubted; they can be devoted to facilitating recreational activities such as “green park, football fields, community canter, allotments for urban agriculture or plant nurseries, and children playgrounds”. Few of the respondents prefer the site being used for structured solid waste recycling facilities to be accessible to all.

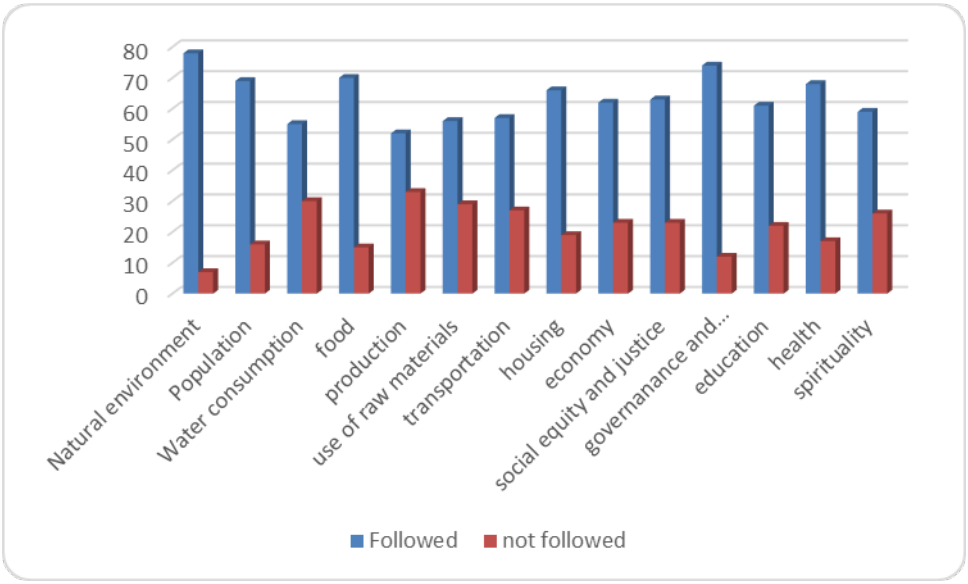
Question 18 requested respondents to identify, amongst the uses suggested, which ones would best enhance and assist the development of sustainable community. Majority of the respondents favoured recreational facilities such as community farm land, playgrounds, football fields, and parks. The process by which respondent communities will take to decide the use of the land reclaimed from waste dump is considered in Q19. Most respondents favoured the consultation process where all stakeholders in the communities will be represented. Having obtained community consensus, they would seek professional advice, and lobby the authorities or government concerned. Generally, from residents’ perception of problems in their communities that may hinder sustainable community development, and by extension sustainable city, they displayed great awareness towards those problems facing their communities and offered fresh perspectives on possible solutions.

### 5.7 Solutions for Local Sustainability

Section D of the questionnaire aims at further revealing detailed knowledge and understanding of residents about their communities, particularly with regards to the built environment and other interrelated sustainable development attributes. In this regards, question 20 requested respondents to identify, among the sustainable community attributes

given, which they believed were considered in the planning of their communities, or they can relate to, in the planning of their communities. The result is presented in Table 5.2 in appendix 11, and reflected in Figure 5.7

**Figure: 5.7 Solutions to Local Sustainability**



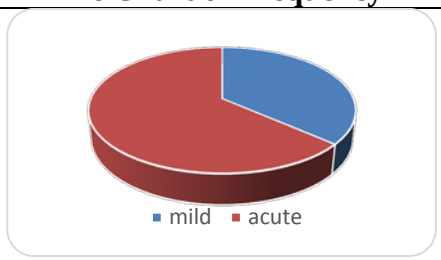
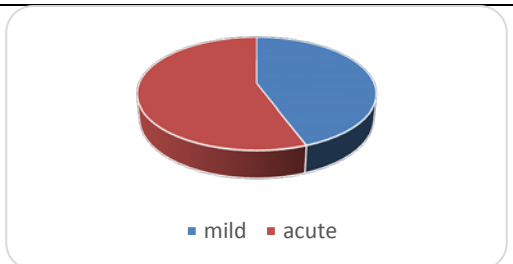
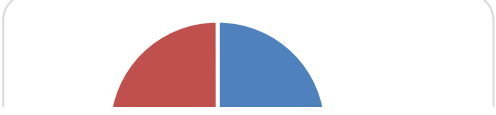

The evidence points out that across every category, except water consumption, production activities, use of raw materials, transportation, education, more than 60% of respondent responded positively to sustainable community attributes in the planning of their communities. It is ironic to note that, Abuja being a planned city, its administrators do not permit the use of local raw materials, and the competition of who owns the most iconic building is intense. Similarly, transportation and connectivity is a major problem, as this was not envisaged to be a problem if the authorities have held rigidly to the ethos of the original master plan, which was well ahead of its time and incorporated all elements recognized today in urban development literature, as critical to sustainable community development. Thus responses to industrial production infrastructure and facilities is reflected in the fact that the Federal Capital Territory was conceived as an administrative rather than the economic capital of Nigeria; given that it is sandwiched between three main economic hubs of Lagos, Kaduna and Onitsha. It is not surprising that there are few industries in Abuja Federal Capital Territory.

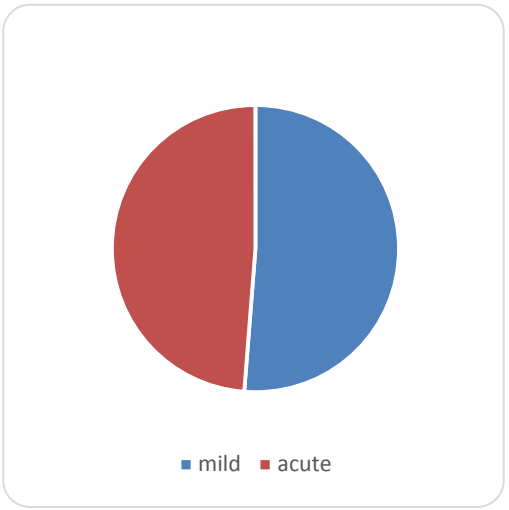
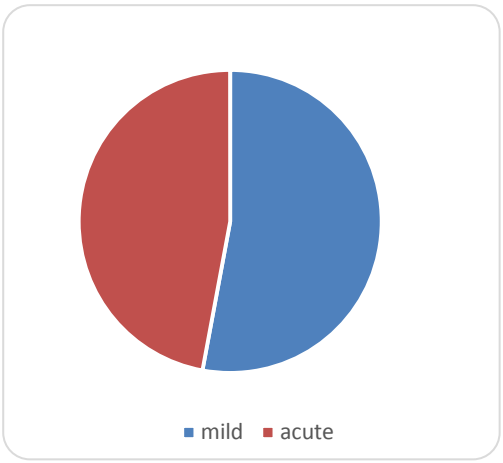
## 5. 8 Local Concerns

In Section E of the questionnaire the researcher focused on local sustainability concerns in the Area Councils and the roles that neighbourhoods can play to assuage these concerns. The idea is to find out if there are variations between the Centre and Area Councils regarding sustainability concerns by households. As shown in Figure 5.8, problems experienced in the area councils are very similar to those experienced in the Federal Capital Territory. Problems of inadequate social amenities and access to them predominate. Particularly issues relating to Housing, Poverty, Equity, and Good governance. As revealed in Figure 5.8, of the total 85 respondents who listed social amenities as a problem, 64% of them consider this problem as acute, while 37% assess this problem as mild. Meanwhile, of the total 88 respondents who voiced their opinions on the state of housing amenities in their localities, 56% view the problem as acute while 44% consider the problem to be mild.

Furthermore, a total of 179 responses were recorded in response to the incidence of poverty with only 28% of respondents considering poverty as acute, the majority of 72% considered poverty as less of a problem. A similar trend can be observed with regards to equity where 49% regard it as acute compared to 51% that regarded it as less of a problem. Furthermore, of the total 85 respondents who listed Good Governance as a problem, 53% consider it to be a mild issue, as opposed to the 47% that finds it to be an acute problem.

**Figure 5.8 Problems Experienced in the Area Councils**

| **Social Amenities (water, transportation, education, hospital etc.)** | **Frequency** | **Percent** | **Pie Chart of Frequency** |
|---|---|---|---|
| Mild | 31 | 36.5 |  |
| Acute | 54 | 63.5 | |
| ***Total*** | ***85*** | ***100.0*** | |
| **Housing Problems** | | |  |
| Mild | 39 | 44.3 | |
| Acute | 49 | 55.7 | |
| ***Total*** | ***88*** | ***100.0*** | |
| **Poverty** | **Frequency** | **Percent** |  |
| Mild | 129 | 72.1 | |

| | | | |
|---|---|---|---|
| Acute | 50 | 27.9 | |
| ***Total*** | ***179*** | ***100.0*** | |
| | | | |
| **Equity** | **Frequency** | **Percent** |   |
| Mild | 41 | 51.3 | |
| Acute | 39 | 48.8 | |
| ***Total*** | ***80*** | ***100.0*** | |
| **Good governance** | **Frequency** | **Percent** |   |
| Mild | 45 | 52.9 | |
| Acute | 40 | 47.1 | |
| ***Total*** | ***85*** | ***100.0*** | |

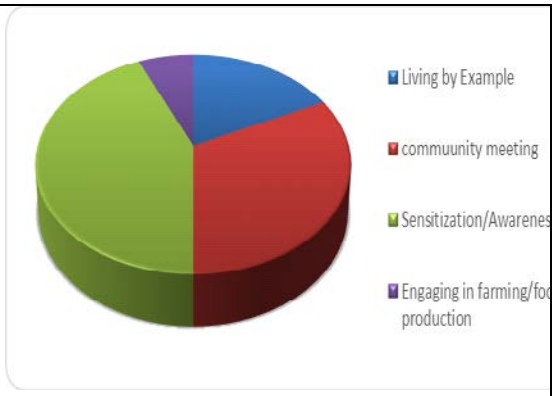
## 5.9 Reflections on Sustainable Practices in FCT

In section F of the question focused on reflections on sustainability practices in Abuja as a whole, with particular reference to the United Nations Local Agenda 21 that considers all stakeholders having roles to play in the realization of sustainable development. As shown in Figure 5.9**,** the various ways individuals can encourage and facilitate neighbourhood participation in Local Agenda 21 are clearly indicated. Of the 90 respondents to question 22,

18% emphasized “Living by Example”, while 33% indicated “Community Meetings”. Meanwhile, 43% favoured “Sensitization / Awareness” while 7% would rather engaging in “Farming/Food Production”.

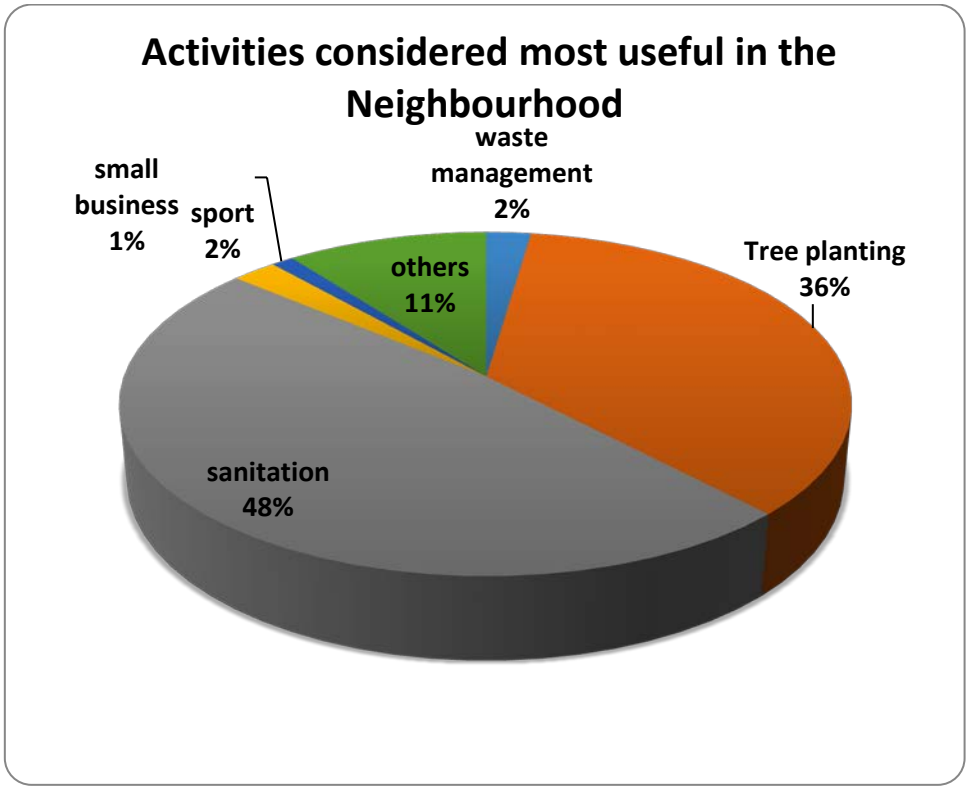
**Figure 5.9 Role of individuals in Neighbourhood Participation**

| **Role of individuals in Neighbourhood Participation** | Frequency | Percent |
|---|---|---|
| Living by Example | 16 | 17.8 |
| Community meeting | 29 | 32.2 |
| Sensitization/Awareness | 39 | 43.3 |
| Engaging in farming/food production | 6 | 6.7 |
| Total | 90 | 100.0 |
| | | |
| | | |




**Question 23:** On the activities considered most useful for neighbourhoods, opinions vary, as can be seen in Table 5.3 in Appendix ii, and Figure 5.10. Evidently, sanitation and tree planting are considered activities which residents argue have most beneficial impacts on their local communities with 48% and 36% respectively. Therefore, stake holders’ effective participation in development initiative, be it local or national, requires not just economic capacity but also, natural and human capital development. In this regards, it is important to be aware of local capacity and their finite quality or scarcity.

**Figure 5.10 Activities Most Useful in the Neighbourhoods**




However, on the availability of records of local capacity, as defined by human, natural, and economic capitals, Figure 5.11 reveals that 57% of respondents responded negatively. Additionally, neither could the quality and scarcities of these scarce resource be ascertained.

**Figure: 5.11 Community Inventory**

| Community Inventory | Frequency | Percent |
|---|---|---|
| Yes | 36 | 42.9 |
| No | 48 | 57.1 |

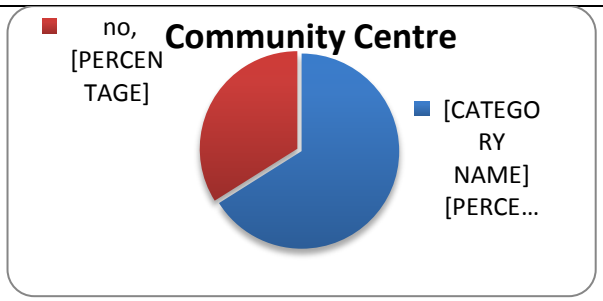
| | | | |
|---|---|---|---|
| Total | 84 | 100.0 | |

This is significant given that a comprehensive inventory of local capacity and greater awareness of the quality of resources available is critical to effective response to sustainable community development issues of wider participation and effective delivery of essential services.

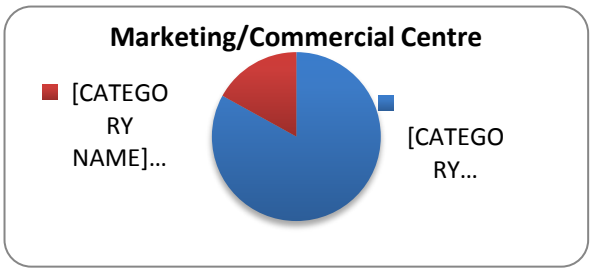
**Question 25** requires respondents to ascertain the availability of facilities critical to sustainable community development in their various Area Councils.

**Figure 5.12 Availability of Facilities Critical to Sustainable Community Development**

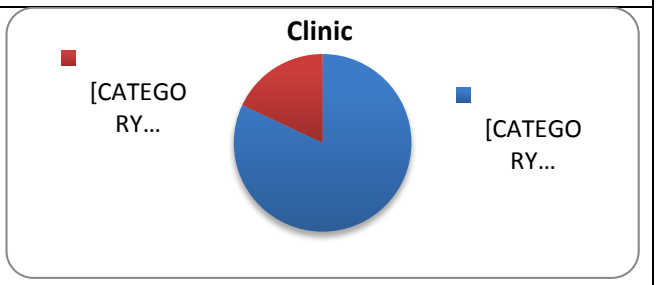
| **Community Centre** | Frequency | Percent |
|---|---|---|
| yes | 74 | 66.1 |
| no | 38 | 33.9 |
| **Total** | **112** | **100.0** |

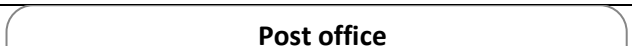



| **Market/Commercial Centre** | Frequency | Percent |
|---|---|---|
| yes | 93 | 83.0 |
| no | 19 | 17.0 |
| **Total** | **112** | **100.0** |




| **Clinic** | Frequency | Percent |
|---|---|---|
| yes | 91 | 82.0 |
| no | 20 | 18.0 |
| **Total** | **111** | **100.0** |



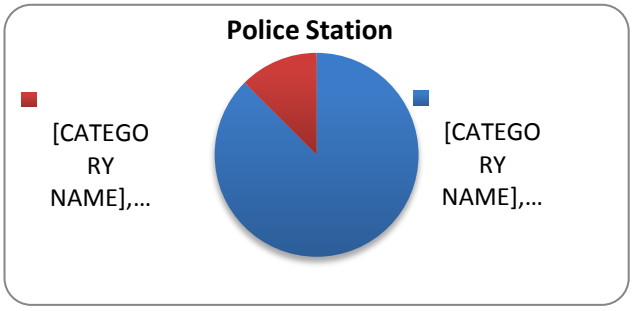
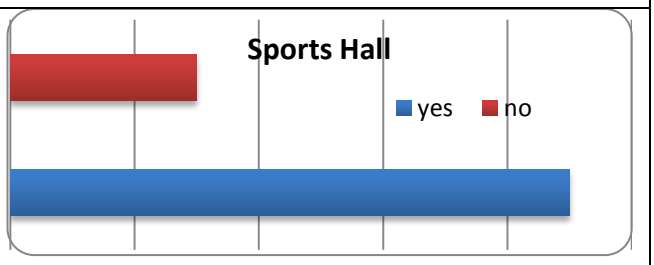
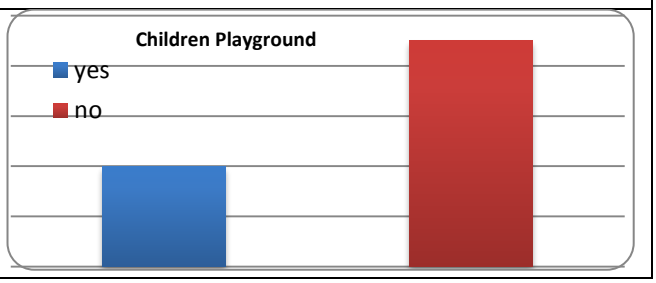
| **Post Office** | Frequency | Percent | |
|---|---|---|---|
| yes | 84 | 76.4 | |
| no | 26 | 23.6 | |
| **Total** | **110** | **100.0** | |
| **Police Station** | Frequency | Percent |   |
| yes | 98 | 87.5 | |
| no | 14 | 12.5 | |
| **Total** | **112** | **100.0** | |
| **Primary School** | Frequency | Percent | **I00%** |
| yes | 88 | 100.0 | |
| No | 0 | 0.0 | |
| Total | 88 | 100.0 | |
| **Secondary School** | Frequency | Percent | **100%** |
| yes | 88 | 100.0 | |
| no | 0 | 0.0 | |
| Total | 88 | 100.0 | |
| **Sports Hall** | Frequency | Percent |   |
| yes | 45 | 53.6 | |
| no | 39 | 46.4 | |
| Total | 84 | 100.0 | |
| **Children Play Ground** | Frequency | Valid Percent |   |
| yes | 38 | 46.9 | |
| no | 43 | 53.1 | |
| Total | 81 | 100.0 | |

Figure 5.12 is self-explanatory, overwhelming number of participants agree to the presence of social amenities critical to sustainable community development. The only exception is

children playground, where 53% of the survey participants decried the unavailability of children playground in their Area Councils.

However, when critically reviewed, the mere presence of these facilities cannot be taken to mean effective contribution to sustainable community development, rather it is their functionality that matters, and this is what question 26 addressees. Question 26 is in two parts, part A requires respondents to indicate the state of communal facilities in their Area Councils. Part B of question 26 requires respondents to identify problems associated with any of the infrastructures identified as non-functional or unsatisfactory. Table 5.4 in Appendix ii reveals infrastructure and services in the Area Councils are functional to varying degrees. For example, 46% of respondents reported the dysfunctional nature of the community centre. Also, local sports halls are rated by 52% of respondents surveyed as non-functional; the post office is rated by 37% as non-functional; while 58% rated children playground as non-functional or dissatisfactory. Generally, Table 5.4 reveals that although majority of respondents attest to the functionality of most facilities, some of those most critical to community cohesion and social capital formation like sports hall and children playgrounds are unsatisfactory and ineffective.

Responses to question 26b reveal that the source of dissatisfaction with local facilities in the FCT is shown in Table 5.5. Most of the problems associated with infrastructure challenges in the Area Councils arise from insufficient quantity to meet growing demands according to 35% of the respondents surveyed. Similarly, 17% put this down to neglect and lack of maintenance; 13% puts the blame on lack of build quality and poor structural integrity; another 17% of respondents put the problems with infrastructure in the Area Councils to the poor environment, which if added to the 17% recording neglect and lack of maintenance constitute about 35% of respondents that point to poor general maintenance.

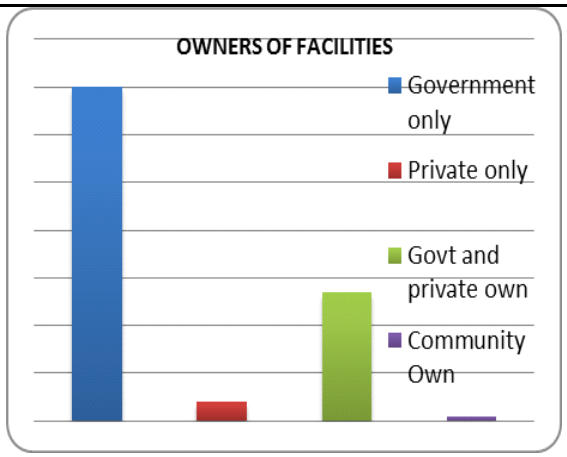
**Table: 5.5 Reasons for Disaffection with Infrastructure in Area Councils**

| Reasons | Frequency | Percent |
|---|---|---|
| Insufficient in number | 8 | 34.8 |
| Neglect/no maintenance | 4 | 17.4 |
| Poor structures | 3 | 13.0 |
| Expensive | 2 | 8.7 |
| Filthy environment | 4 | 17.4 |
| Lack of skilled personnel | 2 | 8.7 |
| **Total** | **23** | **100.0** |

**Question 27** seeks to know who owns and manages these community facilities identified in Figure 5.13 with the intention of knowing the extent that stakeholders, such as neighbourhood associations, participate in the management of community facilities.

**Figure: 5.13. Owners of Communal Facilities**

| **Facilities** | Frequency | Percentages |
|---|---|---|
| Government only | 70 | 68.6 |
| Private only | 4 | 3.9 |
| Govt. and private own | 27 | 26.5 |
| Community Own | 1 | 1.0 |
| **Total** | **102** | **100.0** |




Results from responses shown in Figure 5.13 shows that the government owns most of the facilities in FCT Area Councils. Nevertheless, there is increasing partnership provisions of infrastructure and services, as we can see with the 27% of private and public infrastructure provision declared. However, there is currently a huge deficit in community infrastructure provision and management. Therefore, the researcher's further probe to ascertain the extent to which neighbourhood associations, if any, participate in the management of the identified community facilities. Surprisingly, this question was not responded to which may not be unconnected to lack of understanding that stakeholders, such as community associations, can operate and manage community facilities.

**Question 28** seeks to acknowledge from respondents the extent of community cohesion, evidenced by the frequencies at which community events take place.

**Table: 5.6 Frequency of Community Events**

| Any community events? | Frequency | Percent |
|---|---|---|
| Yes | 53 | 57.0 |
| No | 40 | 43.0 |
| Total | 93 | 100.0 |

As Table: 5.6 indicates, 57% of respondents attests to community activities taking place while 43% reported otherwise in their communities.

### 5.10 Climate Change Impact on Federal Capital Territory (FCT) of Nigeria

In this section of the survey, the researcher uses it to investigate climate change effects in the country generally, and in Abuja FCT in particular with regards to the ecological footprints of urban developments. The environmental impact of Abuja's ecological footprints and residents' awareness of their causal and mitigation roles is obviously noted. Thus, Questions 29 – 34 have been used to elicit participants' opinions accordingly. Figure 5.14 shows the results of responses to this first part of this question by respondents in FCT. Evidently, there is 100% admission that climate change incidences exist to varying degrees in Abuja FCT. While 51% of respondents identify with severity of climate change, 42% admit the same but claim to have experienced a less severe impact, and with 7% claiming the impact to be mild.

| Degree of Severity | Frequency | Percent |
|---|---|---|
| Quite severely | 42 | 50.6 |
| Not severely | 35 | 42.2 |
| Mild | 6 | 7.2 |
| **Total** | **83** | **100.0** |

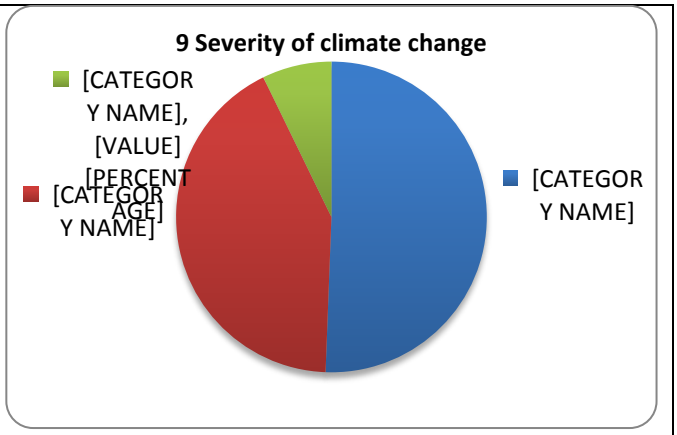



**Figure: 5.14 Degree of Severity of Climate Change Impacts**

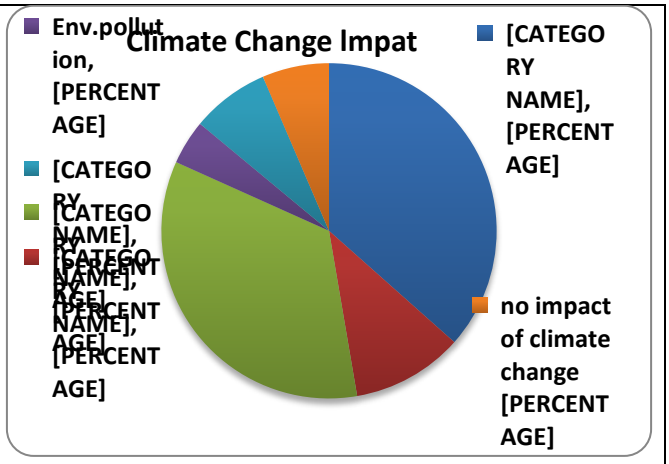
Also, several reasons were advanced to underpin opinions expressed, ranging from a lack of resources – financial, skills, institutions, policies and strategies to manage the incidence and

consequences of climate change effects. Others point to the lack of government's understanding of the dynamics of climate change, this owing to lack of preparedness and evidence of activities aimed at addressing climate change effects.

Furthermore, Question 30 seeks to know how climate change effects have manifested in FCT, and Figure 5.15 – shows that 37% of respondents see unusual and prolonged hot weather pattern as one of the clearest manifestations of climate change in Abuja. Similarly, 34% points to irregular rainfall and flooding in recent times, 11% point to encroaching desertification, while 7% air pollution, mainly from traffic congestion, and 4% identifying environmental pollution, this being solid wastes or refuse.

**Figure: 5.15 Climate Change Impacts**

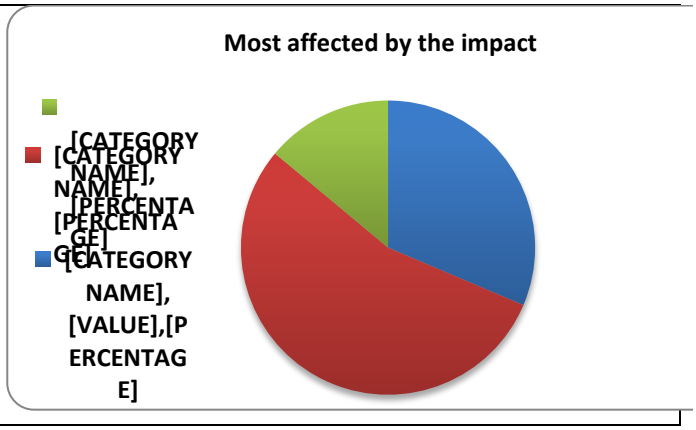
| Impacts of climate change | Frequency | Percent |
|---|---|---|
| hot weather | 34 | 36.6 |
| desert encroachment | 10 | 10.8 |
| Irregular rainfall and flood | 32 | 34.4 |
| environmental pollution | 4 | 4.3 |
| Air pollution | 7 | 7.5 |
| None | 6 | 6.5 |
| **Total** | **93** | **100.0** |




Question 31 seeks to identify those who may be most at risks from climate change effects. The responses to these questions are shown in Figure 5.16, were the general public was identified as mostly affected while farmers came second.

**Figure: 5.16 Most Affected By Climate Change**

| Most affected | Frequency | Percent |
|---|---|---|
| Farmers | 27 | 31.4 |
| General public | 47 | 54.7 |
| Children and the less privileged | 12 | 14.0 |
| **Total** | **86** | **100.0** |



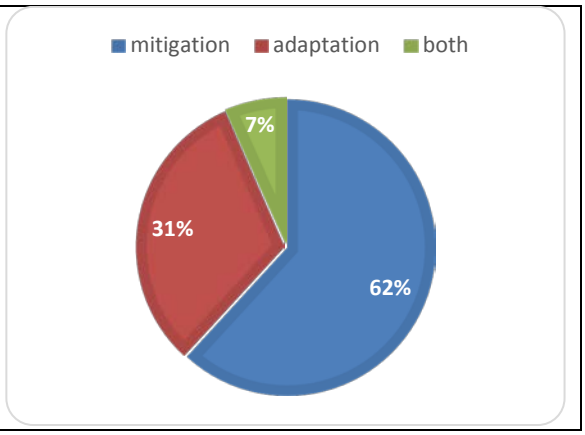
| | | |
|---|---|---|
| | | |

It is worthy to note here that some of the reasons advanced by respondents for their opinions expressed in Figure 5.16 include; the realisation that increasing desertification and unpredictable weather patterns is forcing farmers into many cities. This has become increasingly frightening considering the rate at which farmers are particularly encroaching into Abuja from neighbouring agricultural heartlands of Benue, Nassarawa, Niger, and Kogi States.

Furthermore, Question 32 sought respondents' views on managing climate change effects between mitigation and adaptation strategies, with specific regards to carbon emissions deriving mainly from human activities. According to Figure 17, 62% of participants surveyed opted for mitigation while 32% are advocating for adaptation. However, 7% of respondents favour a combination of mitigation and adaptation strategies.

**Figure: 5.17 Strategy for Managing CO2 Emissions**

| **Best strategy to lesson the effect of atmospheric carbon concentration** | Frequency | Percent |
|---|---|---|
| mitigation | 47 | 61.8 |
| adaptation | 24 | 31.6 |
| both | 5 | 6.6 |
| **Total** | **76** | **100.0** |

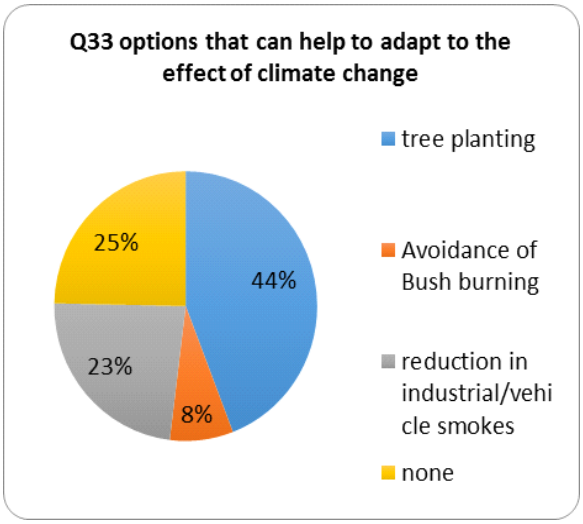



In view of the above, different reasons were advanced for choosing between the different strategies suggested. Those who advanced the mitigation strategy believe that "prevention is better than cure" while those who opted for adaptation hold the view that some climate change effects are inevitable and putting strategies in place to lessen these effects is critically important.

Furthermore, Question 33 seeks to know the actions that are being explored by respondents' communities in trying to adapt to the effects of climate change. The results in Figure 5g.5 indicates the actions respondents believe to be taking place in their respective communities that seems to suggest adapting to the effects of climate change.

**Figure: 5.18 Options to Help Adapt to the Effect of Climate Change**

| Options that can help to adapt to the effect of climate change | Frequency | Percent |
|---|---|---|
| tree planting | 34 | 44.2 |
| Avoidance of Bush burning | 6 | 7.8 |
| reduction in industrial/vehicle smokes | 18 | 23.4 |
| none | 19 | 24.7 |
| **Total** | **77** | **100.0** |

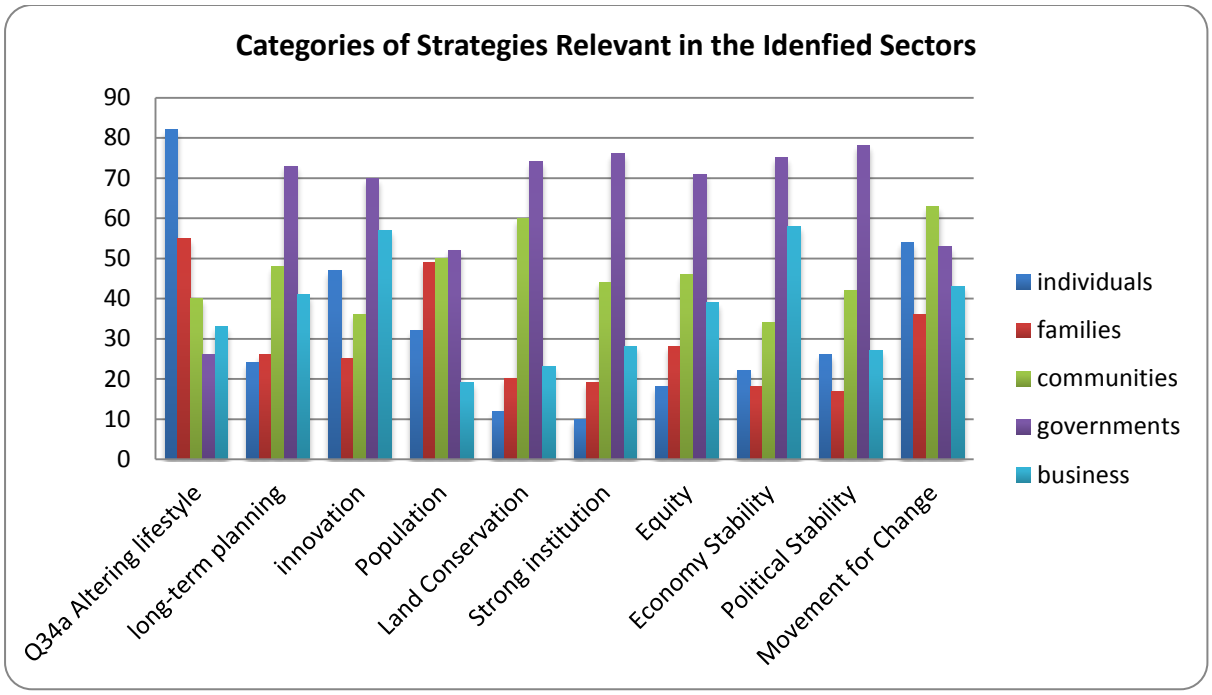



It is manifestly clear from Figure 5.18 that 44% of participants indicated tree planting, 8% cited the prohibition of open biomass burning as a way of reducing CO2 emissions in the FCT. Similarly, 23% of respondents surveyed pointed to Industrial/Vehicle emissions but only as potential source of green gas emission reductions. However, a sizable 25% reported no actions being taking in their communities towards the management of climate change effects.

Question 34 seeks to further identify the depth of knowledge possessed by residence regarding the management of climate change effects by requesting respondents to indicate, amongst 10 strategies suggested, which ones they feel can be pursued by individuals, communities, families, government, and businesses.

Table: 5g.1 in the appendix 2, and Figure 5.19 below shows various strategies have been identified that can be pursued within the various categories to deliver sustainable communities are identified.

**Figure: 5.19**




It can be observed from Figure 5.19 that lifestyle changes have been identified as a strategy most effected by individuals, families and within the community. Long-term planning against climate change effects are considered best executed within government, communities, businesses, families and then at individuals' levels. Also, with all other strategies, the roles ascribed to the government by respondents remain very significant. This particularly resolves

around innovation, strong institutions as well as economic and political stability. Notably, the only variable where the government takes a back seat to communities and individuals is movement for change, and this is in realization that irrespective of governments' attempts to change behaviour, it is the view that communities and individuals are best able to effect meaningful changes in behaviour and attitudes, in this case, towards the causes of climate change, and preparedness for the effects.

### 5.11 Cross Tabulations of Variables in FCT

In other for the researcher to further demonstrate the validity of relevant components of the research results, some of the variables were cross-tabulated for clarity and enrichment of analysis. Variables A (1) – gender was cross-tabulated with Variable B (1) - aspects of sustainable development to see if different sexes prioritise aspects of sustainable development differently.

**Table: 5.9 Cross Tabulation of Gender and Aspects of Sustainable Community**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Aspect of sustainable community | | | | | | | | |
| Sex | Equity | Economy | Housing & Built-Environment | Social Culture | Governance | Transport & Connectivity | Services | Environmental | Total |
| Male | 37 | 47 | 50 | 34 | 54 | 57 | 36 | 43 | 358 |
| | 66.1% | 73.4% | 72.5% | 66.7% | 71.1% | 74.0% | 73.5% | 76.8% | 71.9% |
| Female | 19 | 17 | 19 | 17 | 22 | 20 | 13 | 13 | 140 |
| | 33.9% | 26.6% | 27.5% | 33.3% | 28.9% | 26.0% | 26.5% | 23.2% | 28.1% |
| Total | 56 | 64 | 69 | 51 | 76 | 77 | 49 | 56 | 498 |
| | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Evident in Table 5.9 is the predominance of men in all aspects of sustainable community development. However, the aspects most rated by men are Transport and connectivity, Housing and built environment, governance, the economy, environmental, with equity and services coming in last. For the women, governance followed by transport and connectivity ranked highest. This was followed by equity and housing and the built environment. Services and environmental aspects of sustainable community development were ranked low by women.

In summary, several factors inform sustainable community development. The findings that men and women respond differently to the different attributes of sustainable community

development is instructive. In particular, governance and transport and connectivity are deemed crucially important. This owed, in the case of transport and connectivity to the distance travelled to work, and the proportion of income devoted to transportation. Thus, the fragmentation of journeys owing to poor connectivity carry huge financial burden which is difficult to internalise particularly for women.

Similarly, housing poverty and equity were considered critical to addressing local sustainability concerns. This, again is heavily influenced by housing scarcity and housing affordability, which is a major issue in Abuja. The convergence of views oin the causes and solutions of housing shortages, ranging from land allocated for low-cost housing being diverted to high value housing development to the government partnering with local providers are indicative of Abuja residents' awareness of local problems.

Sanitation and attendant measures such as sensitisation and community education on waste management were strongly emphasised. It was also found that residents hold the view that the government should concentrate maintaining existing infrastructure rather wait until dilapidation could transform lives and ease the burden of dysfunctional infrastructure widely experienced by residents.

## 5.12 Conclusion

In conclusion, the data analysis has shown that Abuja FCT has huge potentials of becoming a 21st century city of sustainable community. However, there are major issues to address; like galvanising and creating awareness amongst urban and rural dwellers to take ownership of the program. This is necessary before this aspiration of a sustainable community of liveable, environmentally friendly, affordable, and guaranteeing equality of access and outcome of available opportunities are realised. In particular, the data has not only validated the literatures, they also point out some practical measures which can prevent Abuja FCT from developing into an unplanned, over populated, environmentally degraded, and a divided city where poverty would be allowed to sit side by side with affluence. Also, the views and opinions of residents who participated in the survey on the current state of the city, the problems, possible solutions, and above all, the roles that all stakeholders need to play have been clearly articulated and analysed in this section. These views and opinions are used to develop a conceptual framework to guide Abuja FCT's development authorities into a 21st century City of Sustainable Communities. However, there is the need to harness the views

and opinions of critical stakeholders like built environment professionals in the development of Abuja FCT and this is further established in Chapter six.

# Chapter Six

## 6.0 Analysis of Data from Interviews with (Built Environment) Professionals

### 6.1 Introduction:

In this chapter the responses from both the qualitative and quantitative data collected from face to face interviews are examined in greater details. In the first place, it is important to note that these interviews were conducted and tailored towards built environment practitioners across the seven built environment professions operating in both the public and private sectors within the Federal Capital Territory Abuja. Through this investigative method, the researcher was able to interact directly with colleagues and probe them further on issues raised by non-professional stakeholders for a balanced view before formulating a conceptual framework to guide the development of Abuja FCT into a 21st century City of Sustainable Communities. The interview was conducted, as earlier indicated, using the snowballing judgmental techniques, which is appropriate for this research (Dunscomb, 2003, Hague and Morgan, 2004). The qualitative research approach compliments the quantitative research strategy adopted in chapter 5. Such a combined triangulation approach, according to Jaeger, (1997 and Thurmand, 2001) enriches analysis and allows for stronger, valid and reliable findings. In particular, this seems to be the case when findings from empirical data analysis confirm findings in the literatures (Denscombe, 2003).

### 6.2 Analysis of Interviews Conducted

The interview data were analysed in three segments. Firstly, the structured interviews were performed using the statistical packages for the social sciences (SPSSX) due to its varieties of option for analysing data as earlier used in chapter five. Also, content analysis was used to extract the essence of the content of the information given by the respondents in the case of the open-ended questions aspects of both the questionnaires and interview segment of the field work. During the interview segment; video voice interview recording and pen on paper noting were used to record proceedings. The possibility of using NVivo Qualitative Data Analysis Software computer software that facilitates in-depth qualitative analysis of textual and audio-visual data sources was initially considered, but for time constraint, it was decided that the descriptive Content Analysis is much easier and will save time. It is an approach widely used for open ended questions, testimonials, individuals' interviews, discussion group, journals, observations, documents, reports, stories and case studies (Taylor – Powell and Renner, 2003; Krippendorf, 2004; Babbie, 2010).

Despite the fact that there are several methods used in qualitative analysis, which includes , typology, taxonomy, grounded theory, analytical induction, matrix analysis, quasi-statistics, event analysis, metaphorical analysis, domain analysis, hermeneutical analysis, discourse analysis, semiotics, heuristic analysis and narrative analysis (Batchiff, 2011). Content analysis was preferred because it deals with human communication. Created to be read and interpreted.

As shown in chapter 4, Table: 4.7.2; the researcher interviewed a total of 60 built environment practitioners cutting across the seven built environment professions in Nigeria, which are; The Nigerian Institute of Architects and its regulatory body and Architects Regulatory Council of Nigeria (NIA/ARCON). Others are Nigerian Society of Engineers and its regulatory body, Council of Regulation of Engineers in Nigeria (NSE/COREN); Nigerian Institute of Town Planners and its regulatory body and Town Planners Regulatory Council (NITP/TOPREC). It also interacted with Nigerian Institute of Builders and its regulatory body, Council for the Regulation of Builders in Nigeria (NIOB/CORBON); Nigerian Institute of Quantity Surveyors and its regulatory body and Quantity Surveyors' Regulatory Council of Nigeria (NIQS/QSRCN). Finally, the Nigerian Institute of Surveyors and Estate Valuers and its regulatory body, Estate Surveyors' Regulatory Council of Nigeria (NISEV/ESRCN) and the Nigerian Institute of Surveyors and its regulatory body and Surveyors' Registration Council of Nigeria (NIS/SRC).

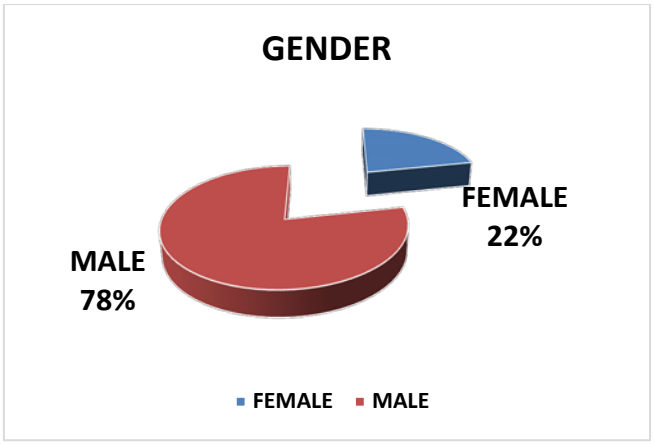
However, the researcher was unable to get a land surveyor (representing NIS) to grant an interview as scheduled. Nevertheless, the researcher is satisfied that, with the result derived from six out of the seven professions, the data will be more than sufficiently representative of the built environment professions involved in the development of Abuja FCT. The structured interview was conducted in order to corroborate the findings with the general questionnaire administered, and to confirm or measure the extent of sustainability practices in the various Area Councils or communities in FCT.

The interview questions were structured in a way that the structured questions responses lead to responses on the unstructured questions. The questions were equally designed to touch on all aspects of environmental strategies in programming, planning strategies for reducing Environmental Impacts, planning to conserve Natural Environment, community and site Design, Planting- vegetation, Building-configuration and Design configuration, design for physical comfort and safety, enhanced public image, building component selection and construction technology. All in consideration of stated environmental issues which are: Pattern of settlement Development, Water Conservation, Energy Conservation, Healthy and Human Welfare, Communal Culture and Ecological Activities.

### 6.3 Analysis of both structured and unstructured interview

Firstly, basic socio-economic characteristics were asked, as with the quantitative analysis in chapter 5, to determine the background of respondents and allow any potential reader of this work who may want to use its findings to make any relevant decisions. In this regards, knowing the characteristics of respondents is useful. As with the quantitative analysis, the gender mix of built environment practitioners surveyed is presented Figure 6.1, revealing identical patters found earlier in chapter 5 where male representation predominates with 78% and female respondents representing 22%. However, this does not represent the ratio of female to male in the built environment professions in Nigeria, which is ratio 1:15 (A.P.B.N. Statistics, August, 2015).

**Figure: 6.1 Gender Composition of Interviewees**




The age distribution of respondent, according to Table 6.2 below shows that the age range of 30-39 years predominate with 43%, while 32% of respondents are between 40 – 49 years, and 22% are between 50-59 years.

**Figure 6.2** **Age Profile of Interviewees**

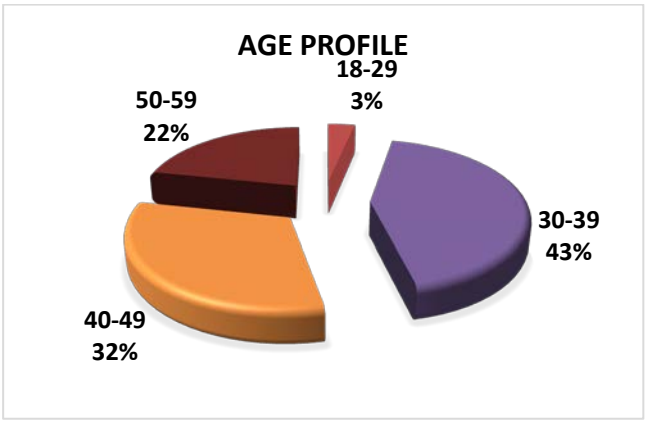
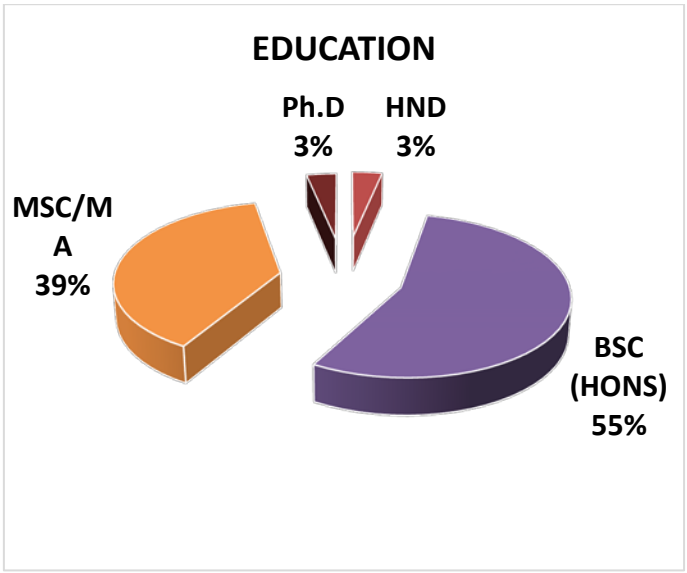



Figure 6.3 specifically reveals that only 3% are aged between 18-29 years, which comes as no surprise given the number of years it takes to become an accredited member of a built environment professional body generally and most especially in Nigeria. Therefore, majority of interviewees (96.7%) are between ages 30-59 which represent experience and maturity in

practice of the built environment professionals engaged in the development of Abuja FCT. Similarly, the educational levels of respondents vary between Higher National Diplomats (HND) to Doctoral Degree of Philosophy (PhDs). However, 55% of respondents have BSc (Hons) degrees across any of the 7 built-environment professions in Nigeria, were 38% of participants similarly hold MSc/MA degrees in any one of the 7 built environment professions. HNDs and PhDs account for 3% each of the total built environment professionals involved in Abuja FCT.

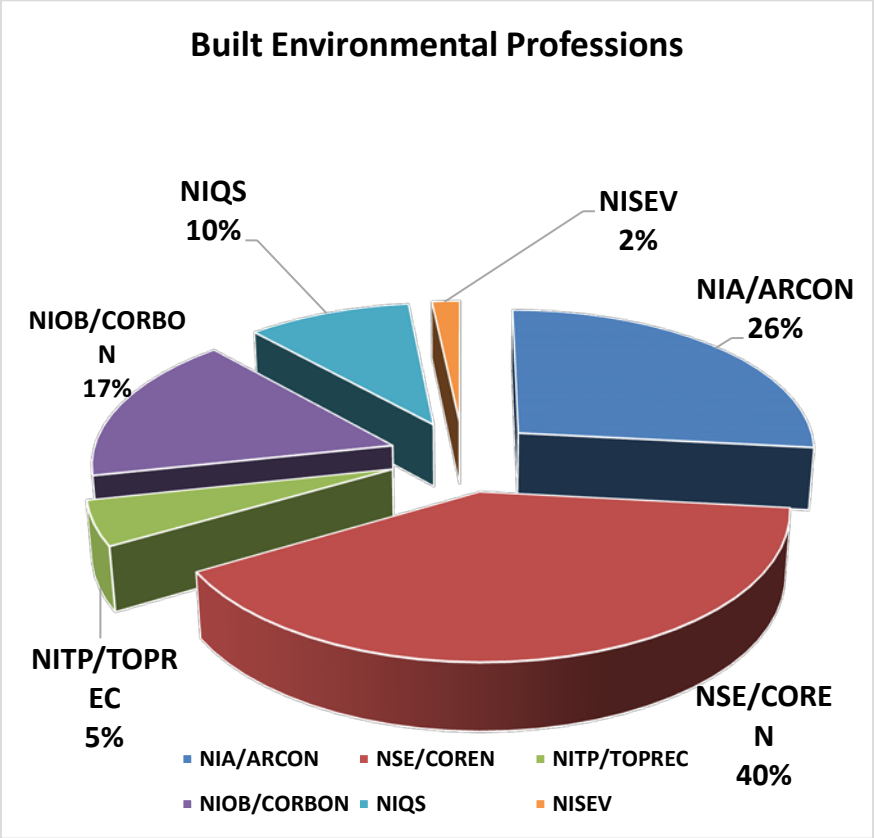
**Figure 6.3** **Educational Background of Interviewees**




The representative of professional bodies in the survey is revealed in Figure 6.4, which shows that the engineering professionals (COREN) predominated with 40% representation, followed by architects with 27%. Others represented are the builders (CORBON) with 17%

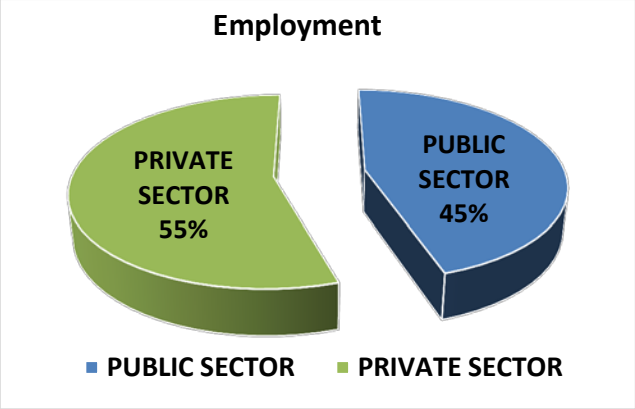
representation, while quantity surveyors (NIQS) represented 10%; Town Planners (NITP) constitutes 5% of total interviewees, while the rest 2% of interviewees belong to the Nigerian Institution of Surveyors and Estate Values (NISEV). Unfortunately, efforts to interview Land surveyors were unsuccessful. But suffice to note that it is 3 out of the 7 built environment professions - Engineers, Architects and Builders are the most critical to the development of Abuja FC, and have the most influence on the sustainability of the built environment.

**Figure 6.4 Professions of Interviewees**



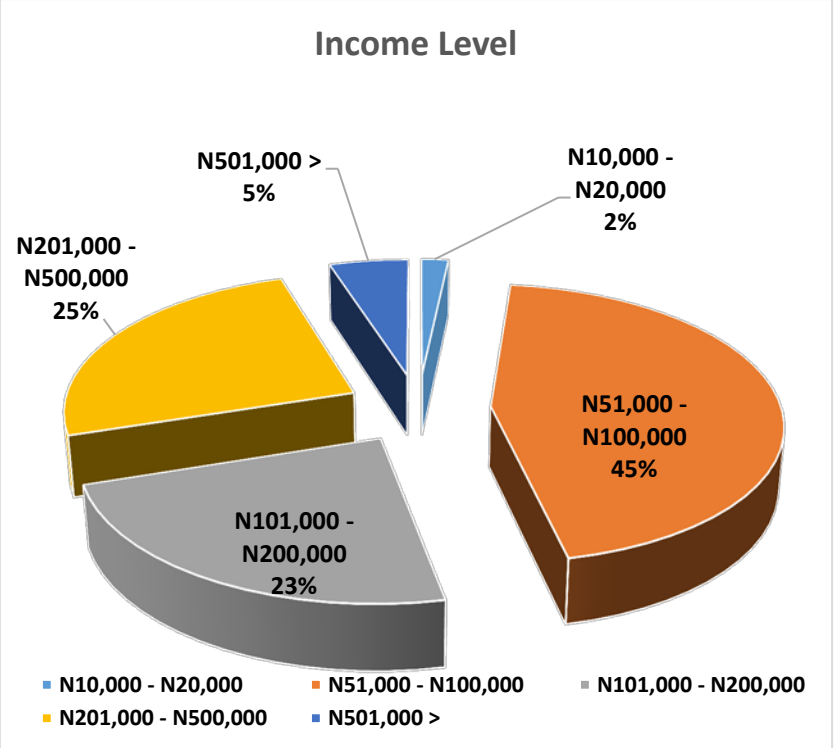

It is also important to ascertain between the private and public sector where participants who are built environment professionals practiced, to ensure that both sectors are covered in the study. Figure 6.5 indicates that 55% of participants work in the private sector while 45% are employed in the public sector. While those in the public sector regulate and enforce urban development codes, those in the private sector produce the designs and urban layout that critically inform urban sustainability, particularly sustainable community development.

**Figure: 6.5 Employment Sector of Employees**




The levels of built environment professionals was also ascertained, this is significant and it may explain the prevalent incidence of rent seeking behaviour across built environment practices in Nigeria. Figure 6.6 reveals that 45% of interviewees attest to earning between N51, 000 and N100, 000 monthly. Also 25% claim they take home between N201, 000 to N500, 000 every month, 23% earn between N101, 000 – N200, 000, only 5% earn above N500, 000 monthly. However, 2% indicate earning between N10, 000 – N20, 000. From these figures, it can be seen that most built-environment professionals earn average monthly income of between N50, 000 – N500, 000 from employment.

**Figure: 6. 6 Income Levels of Interviewees**

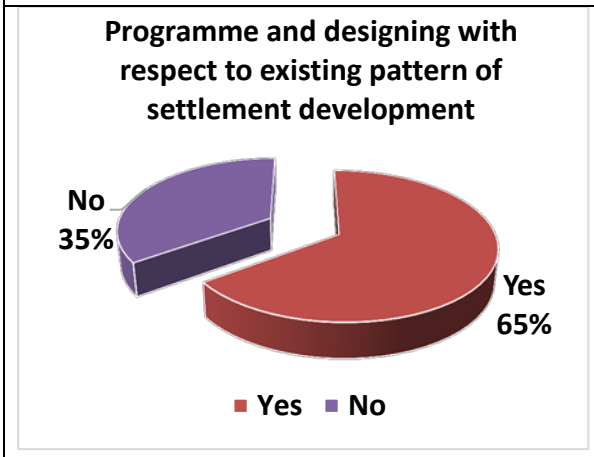
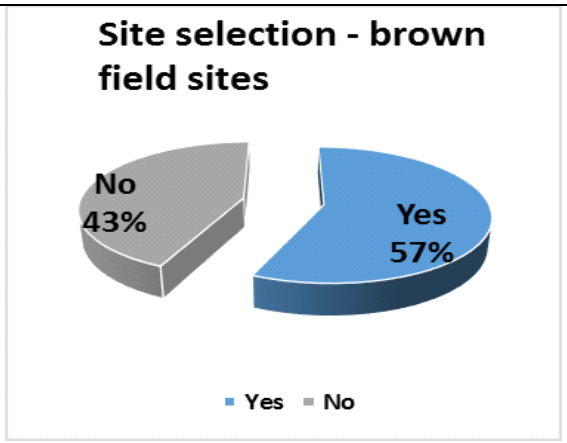



## Section 6B Application of Suggested Sustainable Community Development Criteria

In this section the researcher identified 10 sustainable community development criteria, and these included programming strategies of development; planning strategies for reducing environmental impacts; planning to conserve natural environment; community and site design strategies. Others are planting vegetation strategies; building and design configurations; design for physical comfort and safety strategies; building component selection strategies; and construction strategies. The interest here is to determine the extent that built environment professionals take these factors into consideration in practice, and in particular capture the specific sustainable community development indicators. There are eight such indicators – pattern of settlement development; ecosystem; materials conservation; water conservations; energy conservation, health and human welfare; communal culture, and ecological activities.

### 6B.1a: Programming Built Environment Development

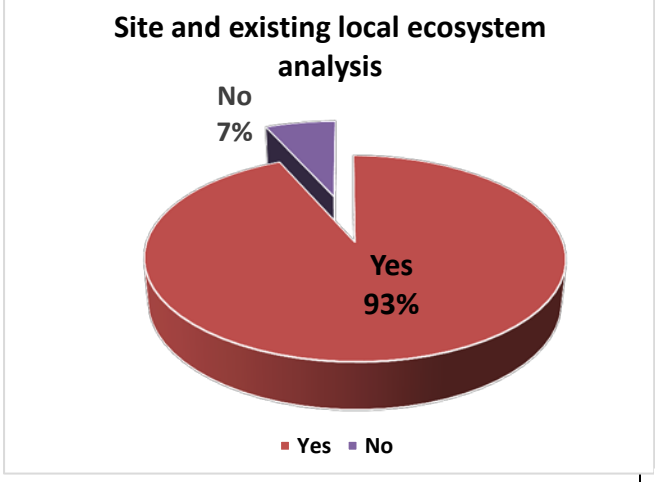
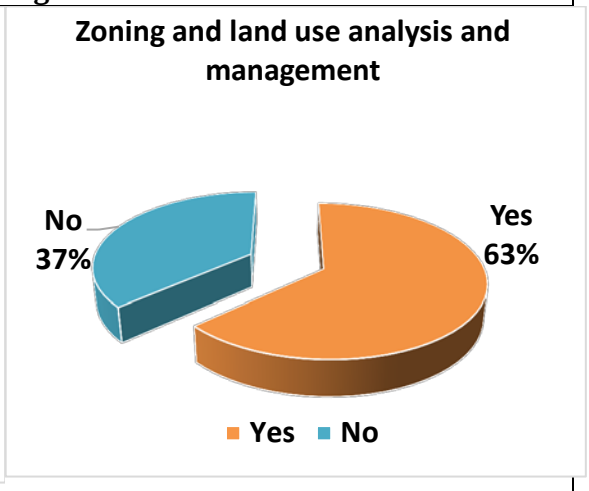
Built environment professional were asked whether they program and design with regards to existing pattern of settlement development. This is critical to maintaining the physical character of a city. As Figure 6.7 shows below, 65% of built environment professionals admit to programming and designing with respect to existing pattern of settlement and development while 35% admitted to not paying attention to existing pattern of settlement development.

| Figure: 6. 7 | Figure: 6.8 |
| --- | --- |
|  |  |





Conversely, Figure 6.8 reveals the response to the question on strategy of enhancing local ecosystem by avoiding sites with significant biodiversity in the process of site selection, such as favouring brown field to green field sites. As shown, only 57% of interviewees said they adopt this strategy while 43% of professionals did not consider that element. Meanwhile, on the strategy of site and existing local ecosystem analysis, as a back drop to housing design, Figure 6.9 reveals that overwhelming number of interviewees which is 93%, take this into consideration while 7% indicated otherwise. Additionally, when asked if they consider zoning and land use analysis and management while programming for development, Figure 6.10 reveal that 63% agreed they do while 37% claim they pay no regards to this strategy.

| Figure: 6.9 | Figure: 6. 10 |
| --- | --- |
|  |  |

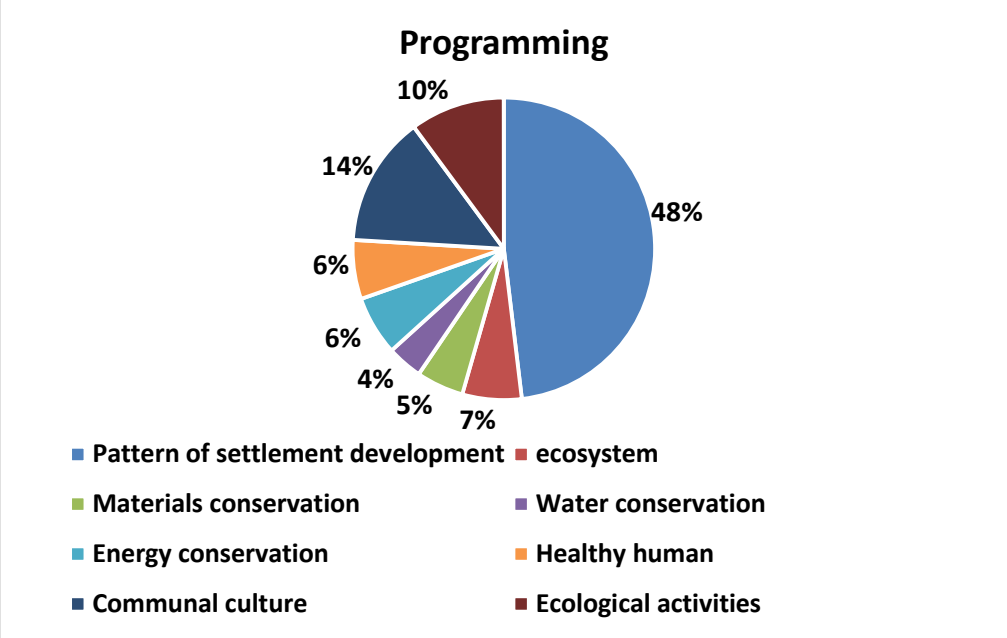




## 6C Linking Strategies to Wider Sustainable Development Issues

On linking strategies to wider sustainable development, various strategies for minimizing the impacts of the built environment on the natural environment are practiced by built environment professionals in Abuja when programming development. Question 6C precisely uncovers the drivers for these strategies. In other words, what environmental indicators built environment professionals have in mind when choosing a particular strategy during development programming.

**Figure: 6.11 Issues considered while programming**




As Figure 6.11 indicate, 48% of participants indicated patterns of settlement, as the main driver for their adopted strategies for enhancing sustainable community development. This is closely followed by 14% that cited communal culture; 10% indicated ecological activities, while 7% indicated the ecosystem as the main driver for their choice of strategy. Generally, 86% of built environment professionals pointed to the environmental pillar of sustainable development, as the main driver for programming and designing with existing pattern of settlement development in Abuja FCT.

### 6D. Planning As a Strategy for Reducing Environmental Impact

In this section, built environment practitioners were probed on the various strategies that could drastically reduce the ecological footprints of the built environment and enhance sustainable community development. Firstly, two widely advocated strategies of reducing the environmental impact or the ecological footprints of the built environment like; the compact

city and re-urbanisation or refurbishment of urban in-fills. Which means whether built environment professionals consider high density living and reuse of brown sites as deliberate sustainability strategies?

**Figure: 6.12**

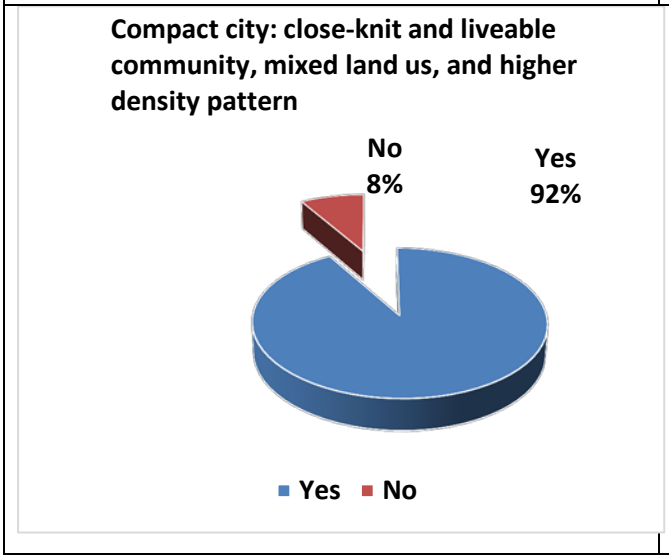
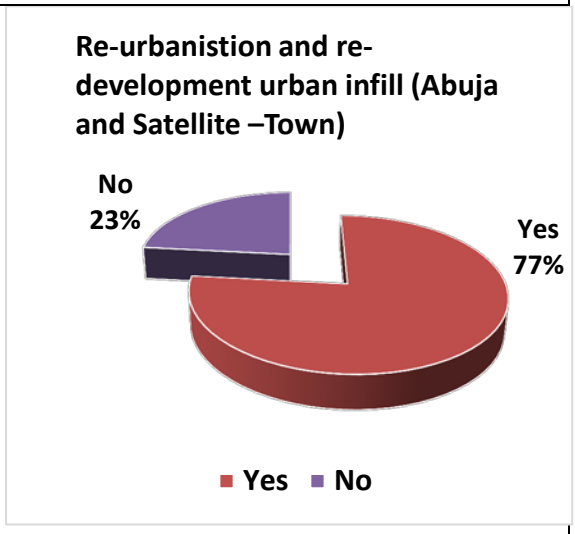
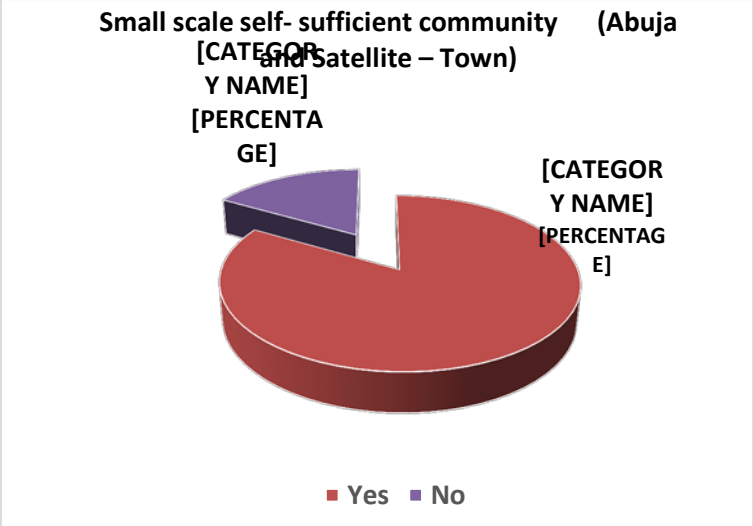



**Figure: 6.13**




As Figure: 6.12 clearly shows, 92% affirmed to the compact city strategy, only 8% do not subscribe to the strategy. Similarly, with the strategy of re-urbanization and re-development of urban infill in FCT while planning for the reduction of Environmental impacts; 77% of the interviewees agree with the strategy while 23% disagree with the strategy, as shown in Figure 6.13. However, when asked if the strategy of small scale self-sufficient community is a factor they would consider in planning for reducing environmental impacts in FCT, 83% of interviewees responded positively while 17% differed on the use of this strategy as clearly shown in Figure: 6.14.

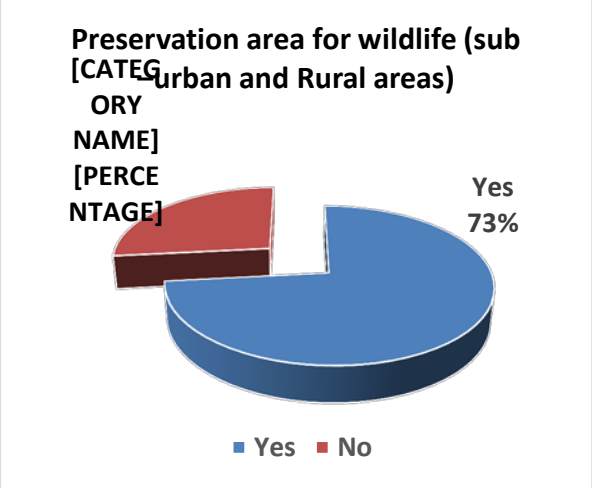
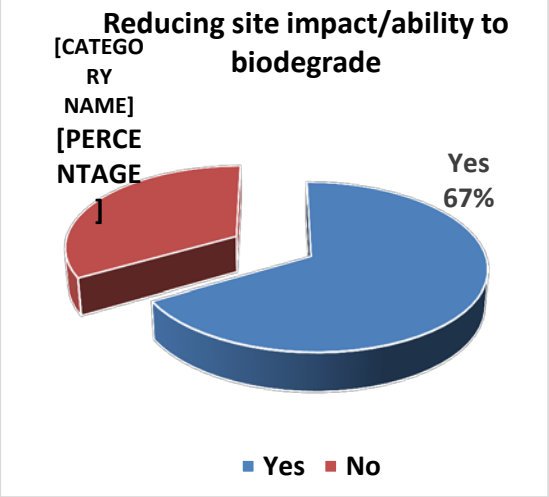
**Figure 6.14**




## 6. E Planning to Conserve Natural Environment

Overall, the interview questions in this section are intended to assess the level of application by built environment professionals in Abuja which is one of their strategies for planning for the conservation of the ecosystem. In this regards, seven questions were posed in all, and the results presented in Figures 6.15 to 6.21. The analysis further reveals the issues considered while affirming the suggested strategies discussed with each interviewee. This is shown in Figure: 6.B:3.

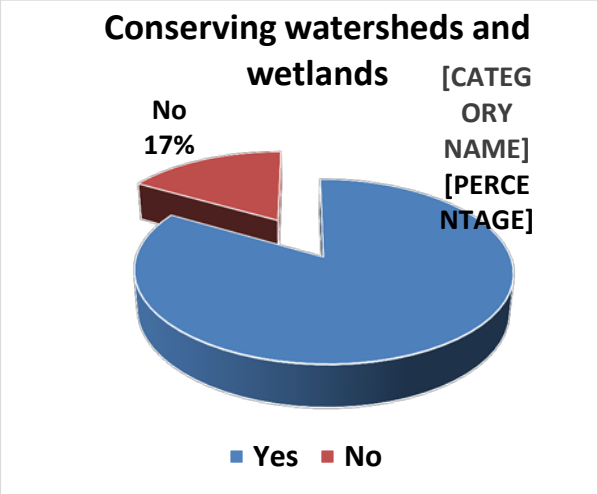
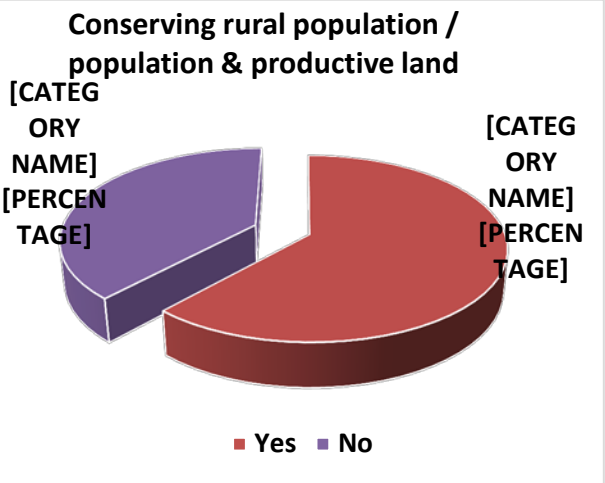
Also the researcher asked each interviewee whether in strategizing to conserve the ecosystem or natural environment whether preservation areas for wildlife in pier-urban and rural areas are a strategy they could consider. Figure 6.15 show that 73% of interviewees affirmed their support for such a strategy while 27% did not deem this necessary. On impact reduction through the specification of biodegradable materials, as a strategy, Figure 6.16 reveals that while 67% of interviewees would take this into consideration 33% of participants disagreed with the strategy. This is against the backdrop of huge problems of solid waste discussed in chapter three, which is posing huge health and environmental pollution problems.

| Figure: 6.15 | Figure: 6.16 |
| --- | --- |
|  |  |





Consistent with the above, the researcher asked question on whether conserving watersheds and wetlands is a planning strategy for enhancing the ecosystem or the natural environment, 83% of interviewees considered it important while 17% of interviewees disagree as shown in Figure: 6.17. However, in the strategy of conserving rural populations, productive land in Abuja and satellite towns is considered in planning, as s strategy for protecting the Natural Environment, 62% subscribes to the strategy while 38% disagrees, and this is presented in Figure 6.18.

| Figure 6.17 | Figure 6.18 |
| --- | --- |
|  |  |





The extent to which social and environmental impact analysis are adopted in feasibility studies in planning strategy to conserve rural populations; productive land in Abuja FCT was also investigated. Figure 6.19 revealed that whilst 62% agreed to the strategy only 38%

disapprove of the strategy. Similarly, participants were asked whether they considered social and environmental impacts in feasibility studies. Figure 6.20 shows that 77% of interviewees do cater for this strategy while 23% admitted not to bother about this strategy during feasibility studies.

**Figure: 6.19**

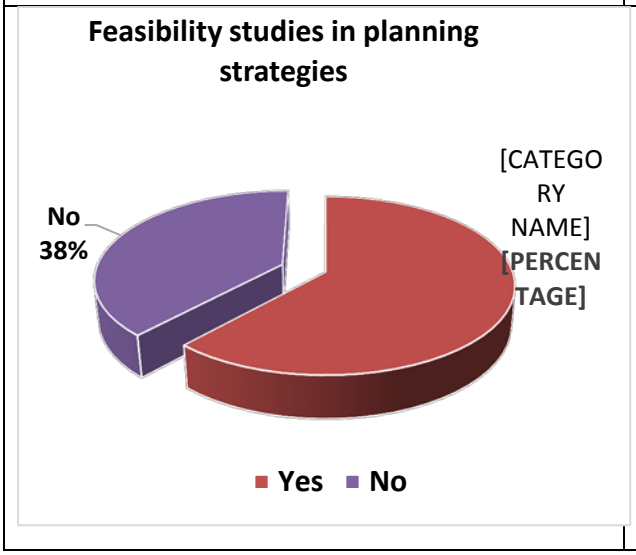
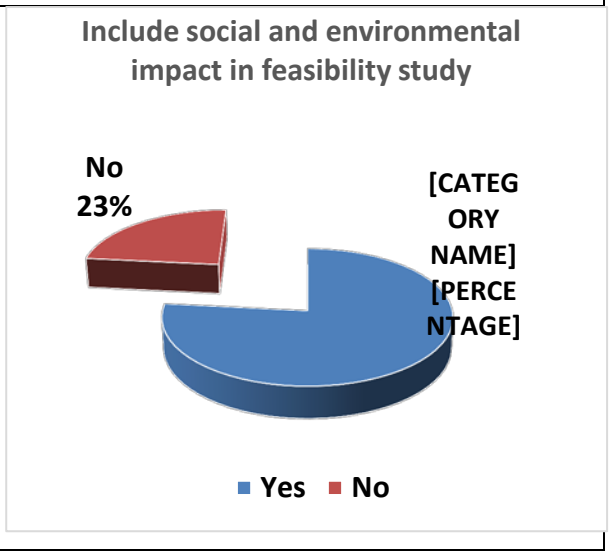
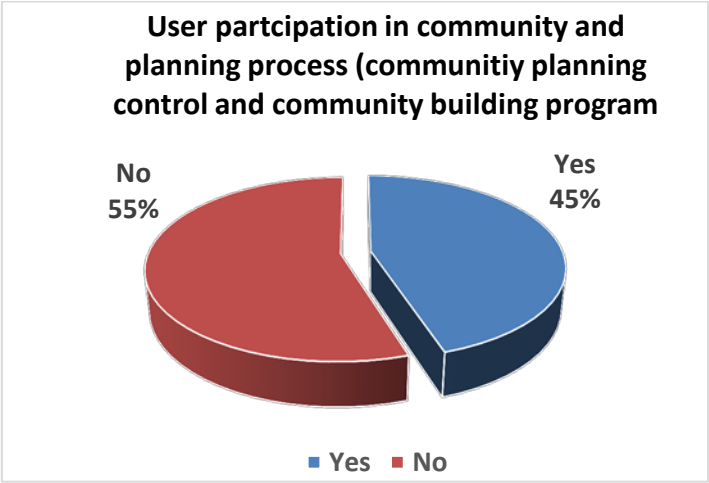



**Figure 6.20**




Finally, interviewees were asked if they pay attention to the strategy of user participation in community and the planning process which is reflected in Figure 6.21 which shows that 45% confirm they subscribe to this strategy while the majority of 55% do not consult the communities during the planning process, as a strategy for ecosystem conservation.

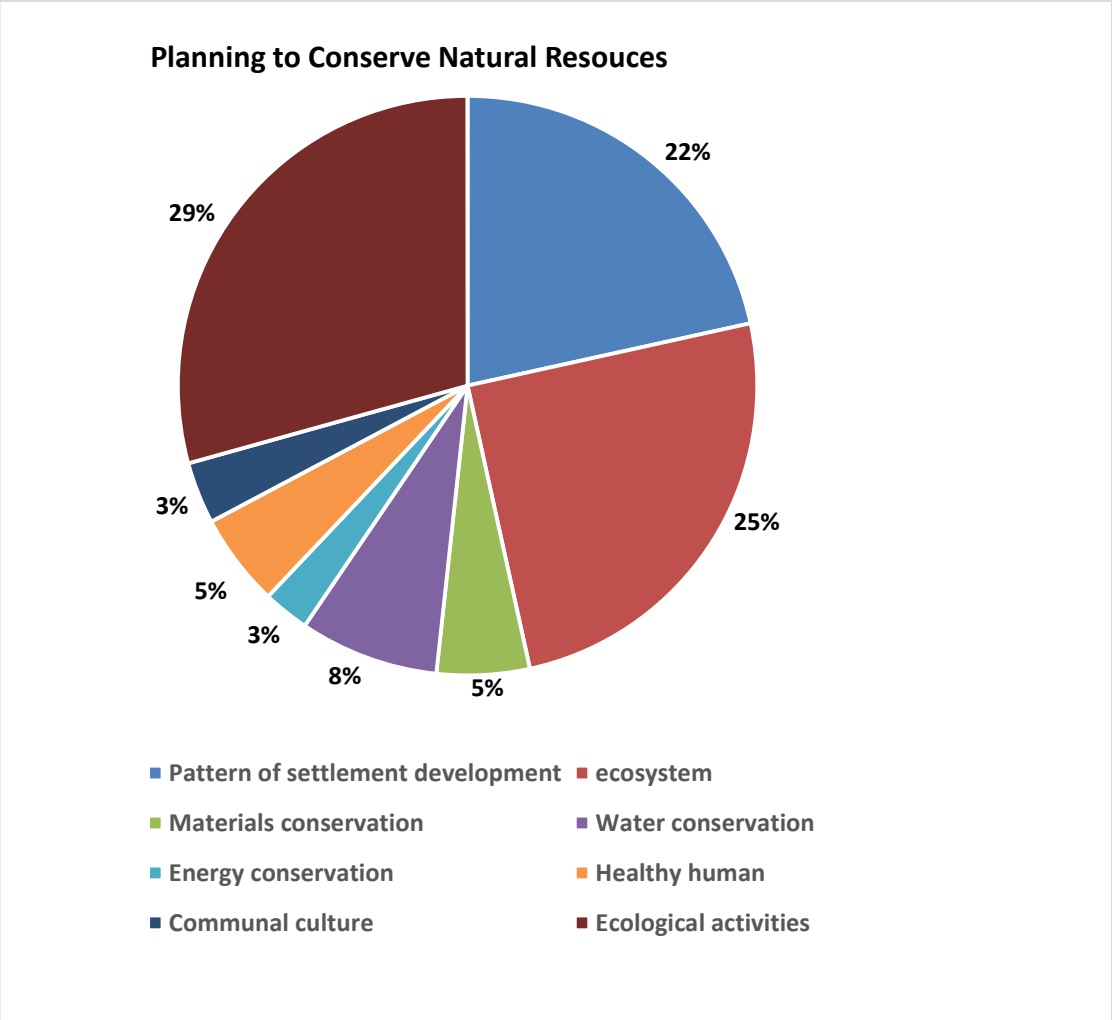
**Figure 6.21**



### 6F Issues Considered while Planning to Conserve Natural Resources

Having followed the strategies employed by built environment professionals operating in Abuja and what they would adopt in planning natural resource conservation, question 6F ascertained the aspects of the wider sustainability agenda. This is crucially important in order to understand the underpinning rationale to selected strategies in response to natural resource conservation. As revealed in Figure 6.21, 22% of interviews admitted to be driven by pattern of settlement development in planning for natural resource conservation; 25% are driven by ecosystem considerations, 5% are driven by the need to conserve construction materials, while 8% pay attention to water conservation. Energy conservation, as a driver, appeals to only 3% of the participants, while concerns for healthy human or liveable environment are considered by 5% of interviewees.

**Figure: 6.22 Planning to Conserve Natural Resources**

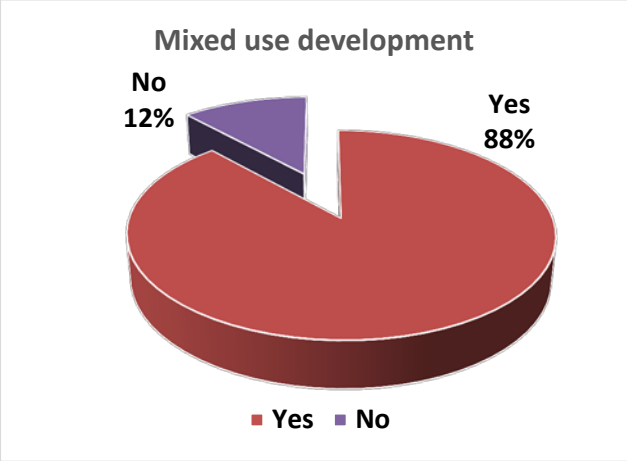
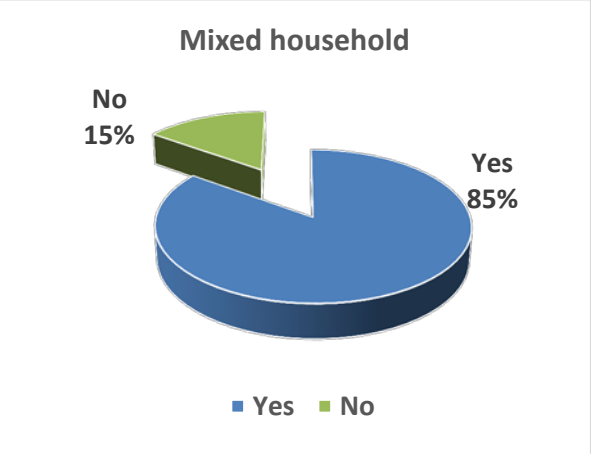



Furthermore, while 3% of interviewees consider communal culture as a driver, 29% consider ecological considerations to be the drivers of their chosen strategies for natural resource conservation in Abuja. It can be seen generally, that environmental considerations are a significant driver for natural resource conservation by built environment professionals operating in Abuja FCT.

### 6G. Community and Site Design

This section intends to access the knowledge of built environment professionals' strategic approach to site design in relationship to the communities. The researcher asked twelve questions in this section and the results resented in Figures 6.23 to 6.34. The first question was that of mixed use development, which is widely acknowledged in the literature to facilitate social cohesion and social capital formation. As shown in Figure 6.23, 88% agree to

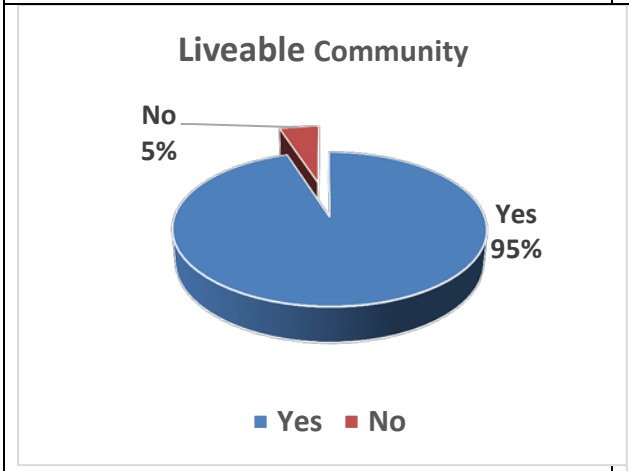
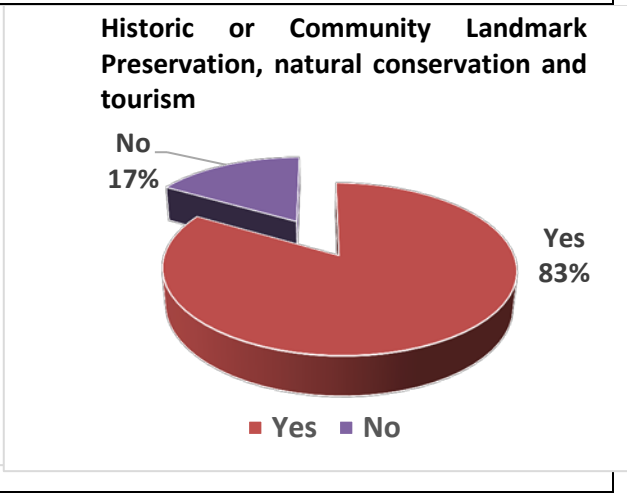
the strategy while only 12% of the total interviewees differ. However, when asked if the strategy of mixed household-community and site design strategy is applied in practice, 85% of interviewees claim they do while 15% of interviewees differ on this, as clearly shown in Figure 6.24.

| **Figure 6.23** | **Figure 6.24** |
| --- | --- |
|  |  |





Furthermore regarding the question asked on whether the professionals apply the strategy of liveability while designing community sites; 95% of the total interviewees agree, only 5% of built professionals disagree, as shown in Table: 6.25 below. Also, a question was raised about the extent that strategies of historical or community landmark preservation, natural conservation and tourism are applied while carrying-out community site design, and as Figure 6.26 clearly shows, 83% of interviewees would adhere to the strategy but 17% of interviewees do not subscribe to the strategy.

| Figure 6.25 | Figure 6.26 |
| --- | --- |
|  |  |





On the strategy of whether culture, such as spirituality, art and craft is considered when designing community sites, Figure 6.27 below shows, 72% of interviewees agree while 28% disagree. Similarly, interviewees were asked if any consideration is giving to local businesses and services in designing within local communities, and according to Figure 6.28, 77% of interviewees would consider such a strategy and 23% of interviewees differed on the strategy.

**Figure 6.27**

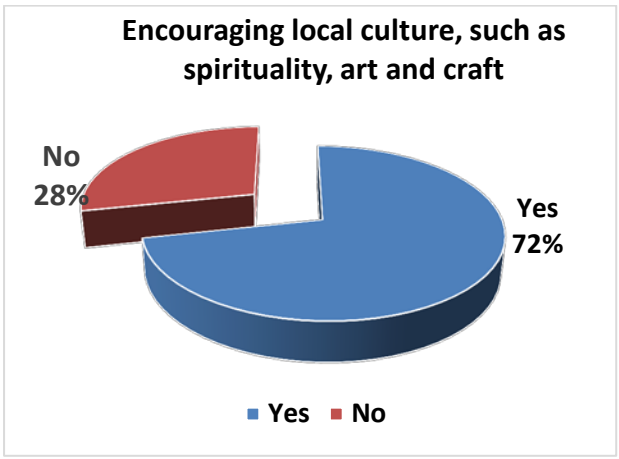




**Figure 6.28**



It is paramount to note that the researcher asked the participants in the interviews whether the suggested Strategy of Design with respect to ecological feature such as topographical contours and landscape features are considered in practice by built environment professionals. The sustainability implications of not achieving this in design can be seen in flooding that have become rampant in Abuja and other major cities. As Figure 6.29 indicates, 83% of interviewees admitted paying attention to this strategy while 17% responded

negatively to the question. Regarding the strategy of preserving and creating active green space in community design, Table 6.30 reveals that 85% of the interviewees would consider the strategy as opposed to 15% who would not consider the strategy.

The strategy of reducing private vehicle use in community design, as a strategy of enhancing the sustainability of communities yielded startling results shown in Figure 6.31 where only 37% of interviewees admitted regards for this strategy, and the majority of 63% would not consider this strategy in community design. On pedestrian walkways and crossing, 87% of interviewees favoured this strategy while 13% were not in support, and this is evidenced in Figure 6.32. The results for the question on cycling facilities, whether it is considered in community designs, are very similar to those obtained for pedestrian walkways and crossings. As Figure 6.33 indicates, only 37% of interviewees agreed taking this into consideration when designing community projects, while a massive 63% have no consideration for this strategy.

Figure 6.29

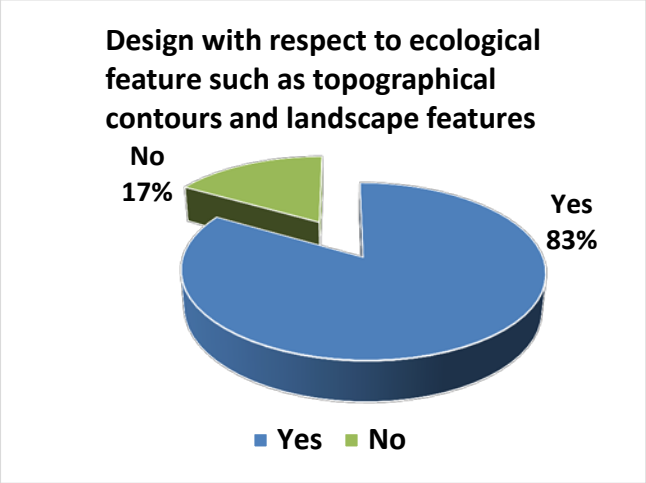



Figure 6.30

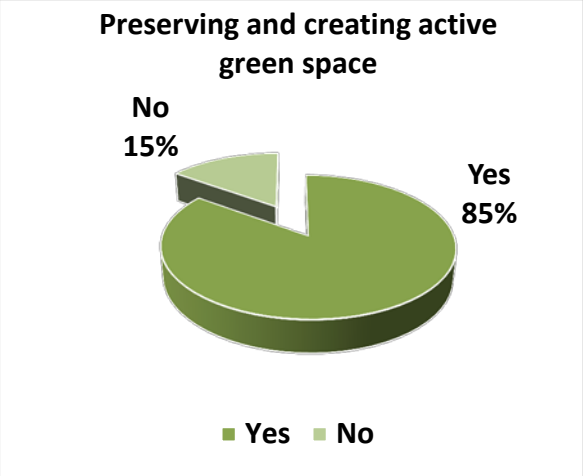



Figure 6.31

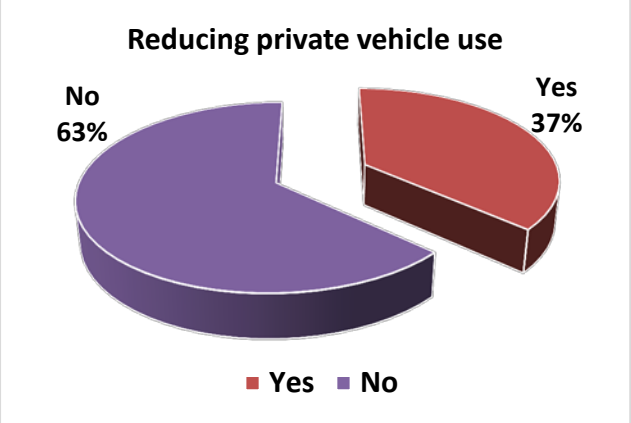



Figure 6.32

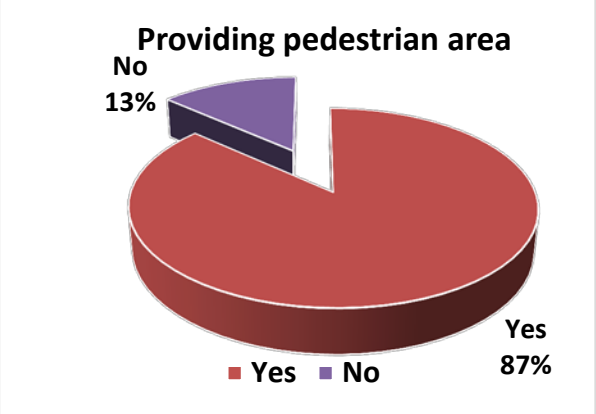



Figure 6.33

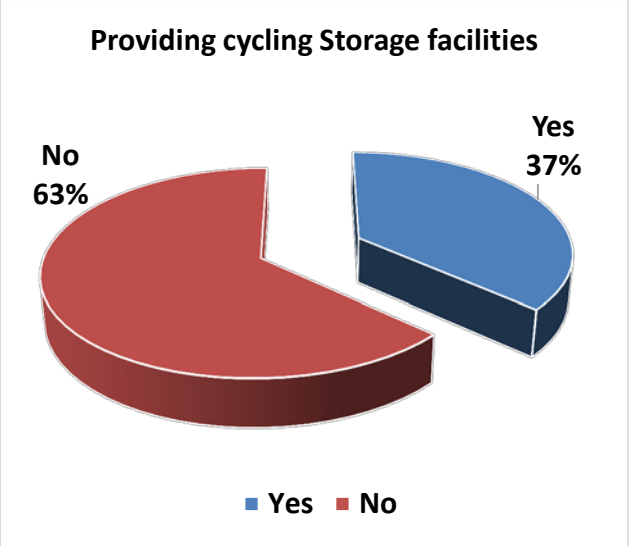
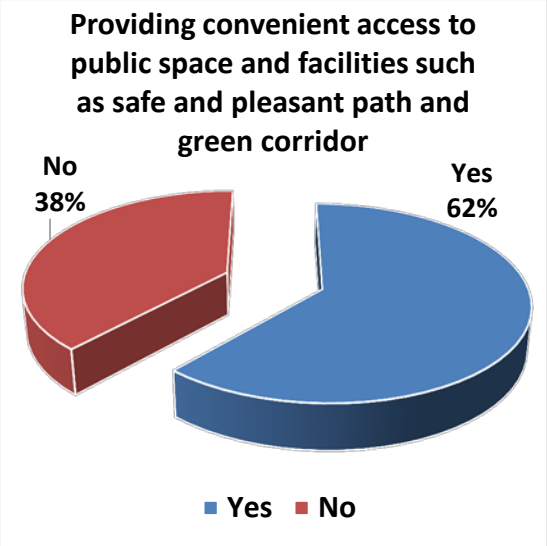



Figure 6.34

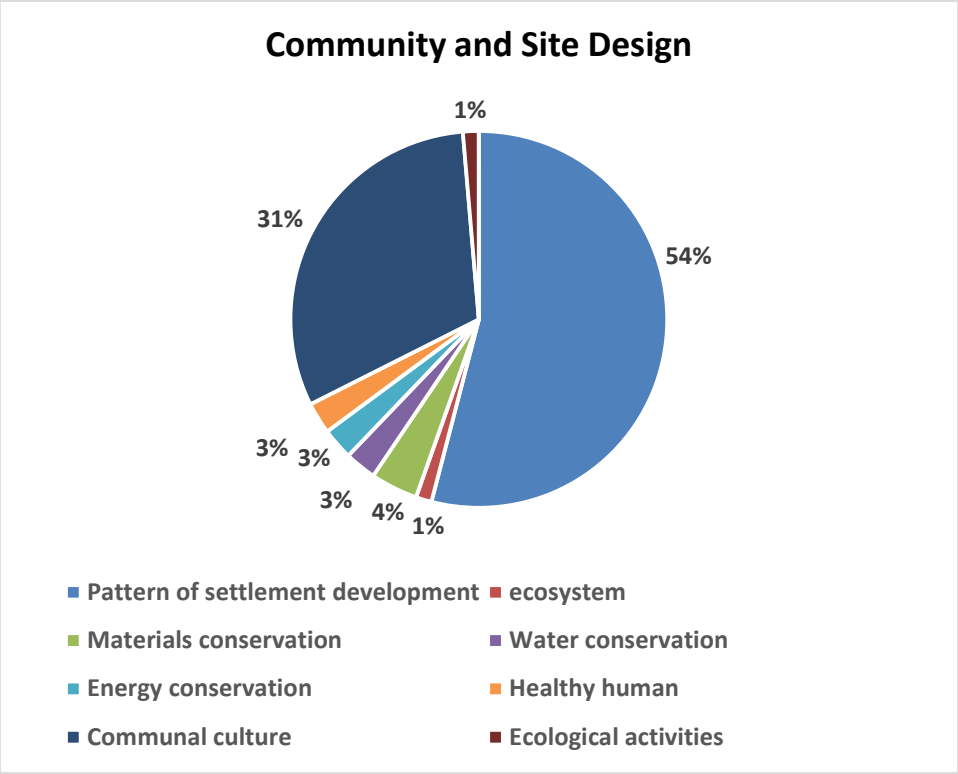


Finally, this section concludes when the interviewees were asked whether the suggested strategy of providing convenient access to public space and facilities such as safe and pleasant path and green corridor is considered by built environment professionals in designing a sustainable community. As Figure 6.34 reveals, 62% of interviewees subscribe to this strategy, as opposed to 38% of interviewees who do not subscribe to the strategy.

## 6H Issues Considered while applying strategy of Community and Site Design

This section considers the drivers for the strategies applied in community and site design. The results show in Figure 6.35 that 54% of built environment professionals consider pattern of settlement development when designing sites and communities, 31% of professionals consider the issue of communal culture while only 1% of the interviewees ranked Ecosystem and Ecological activities as drivers, respectively. However, 3% pointed to Water Conservation, Energy Conservation and Healthy Human respectively, while 4% pointed to Material Conservation as driver.

**Figure: 6.35**



### 6I Planting Vegetation to Drive Sustainable Community Development

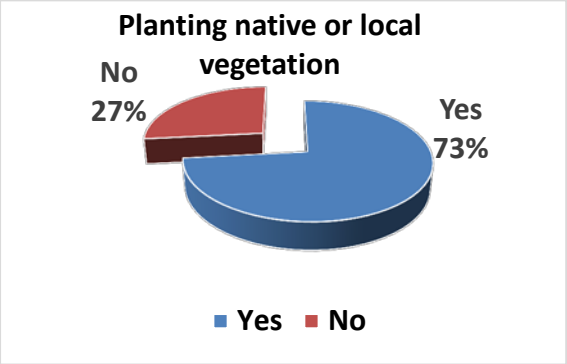
The interview questions in this section are tailored towards revealing whether the built environment professionals in Abuja apply the suggested strategies when planning and designing communities and sites; and the issues they considered. The result of the interview in this section is displayed in Figures 6.36 to Figures 6.42. The researcher asked the interviewees whether the suggested strategy of planting native or local vegetation apply when designing a sustainable community. Results in Figure 6.36 reveal that 73% of interviewees subscribe to the strategy, as against the 27% that oppose the strategy. On the strategy of planting vegetation to create natural shelter and shade for sustainable community development, 90% of interviewees agree to the strategy while 10% disagree with the strategy, as shown in Figure 6.37. Similarly, on the strategy of using vegetation to maintain the capacity of hydrological cycle and promote habitats is considered in planning sustainable community design, 80% of interviewees agreed to the merits of the strategy compared to the 20% that disagree with the strategy, as revealed in Figure 6.38.

Following from the above, the strategy of protection and maintenance of surface and ground water quality and quantity was put to interviewees, and they were asked whether or not the strategy is considered in the planning and designing of communities in Abuja. Figure 6.39 shows that 77% of interviewees agree that they actually considered the strategy while 23% disagreed. In the case of energy conscious urban planning and site planning strategy, some interesting results were produced were only 52% of interviewees favoured the strategy, as opposed to the 48% that do not believe in the strategy, as indicated in Figure 6.40. This particular result is instructive because of severe energy problems plaguing the Nigeria, particularly in Abuja FCT, which is crippling businesses and enterprise. Furthermore, Figure 6.41 reveals the result of the interviewees' response to the strategy of planning and designing for Local food production, such as household food growing, street farming, city farming, and perm-culture in satellite towns in Abuja in designing sustainable community, 57% of interviewees favoured the strategy compared to the 43% who disagreed with it.

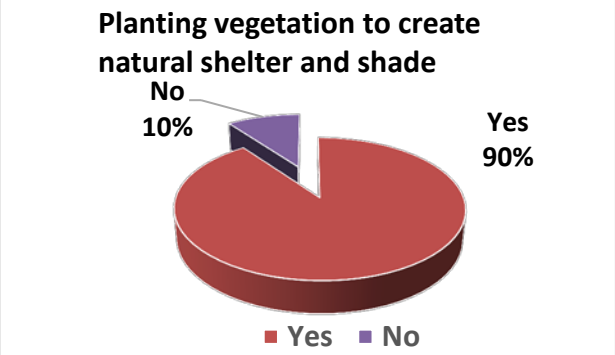
Additionally, the strategy of encouraging community member involvement in decision making is implemented into sustainable community design, shown in Figure 6.42 which clearly reveals the little regards that built environment practitioners extend to community participation, which is a critical factor underpinning the concept of sustainable community

development. Only 33% favours the strategy while a massive 67% of interviewees disagree. Similarly, on the strategy of technical facilitation in community building program, Figure 6.43 shows only 50% of interviewees subscribe to this strategy, as opposed to the 50% of interviewees that do not consider the strategy in designing sustainable communities.

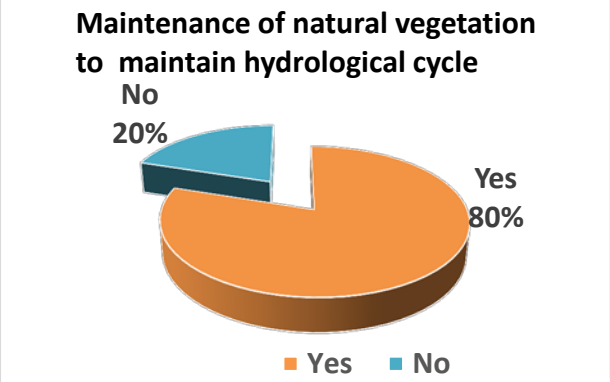
**Figures 6.36**



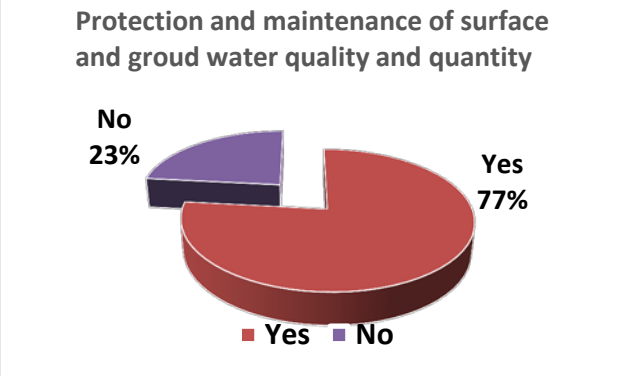

**Figures 6.37**



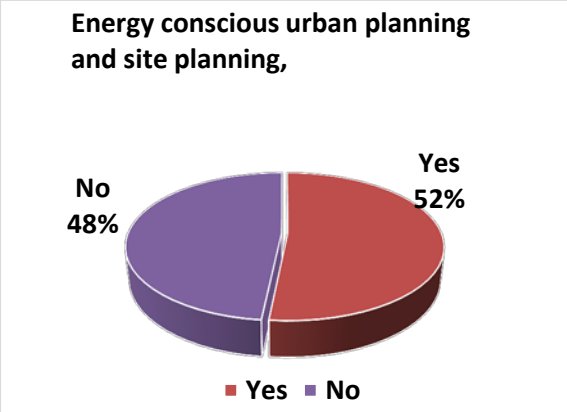

**Figures 6.38**



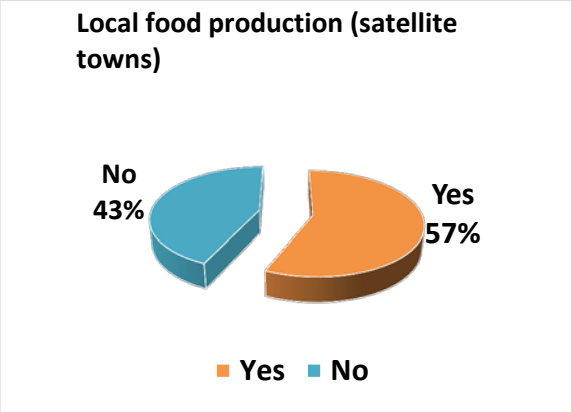

**Figures 6.39**



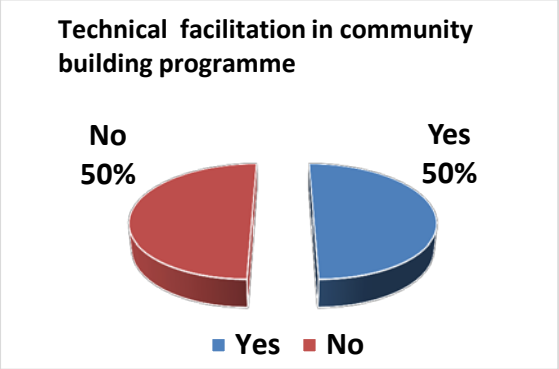

**Figures 6.40**



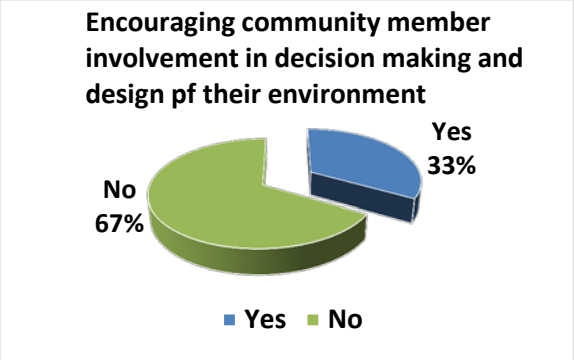

**Figures 6.41**



**Figures 6.42**



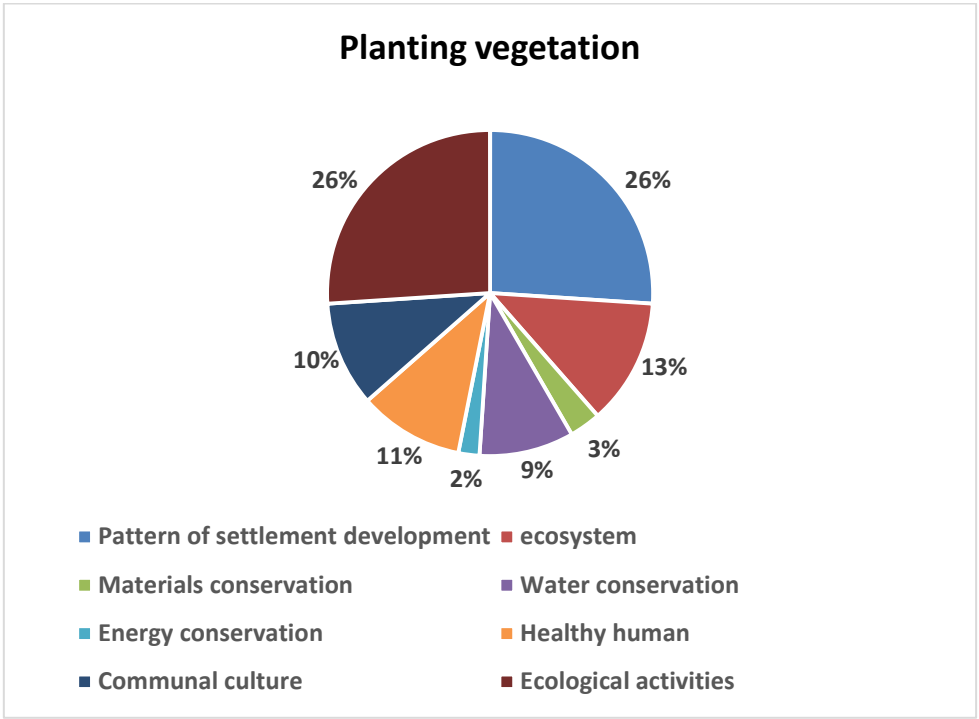

**Figures 6.43**




## 6J: Issues Considered while applying strategy of Planting Vegetation

As with other variables, interviewees were asked to reveal the wider issues within the sustainable community debates that influenced the choice of strategies. The drivers for the strategies chosen were ascertained, and these are revealed in Figure 6.44. Evidently, ecological and pattern of settlement development predominate amongst the drivers of the use of vegetation in enhancing sustainable development. Other prominent drivers include ecosystem and communal culture considerations respectively.

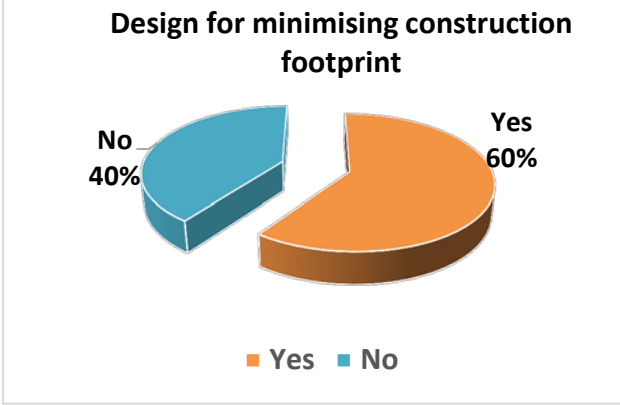
**Figure: 6.44**



## 6K Building and Design Configurations for Sustainable Development

In this section, interviewees were requested to respond to either Yes or No to a total of 18 questions under different suggested strategies for achieving sustainable development through building configuration with regards to 8 specific environmental issues as possible drivers for chosen strategies by built environment professionals. The first of these strategies is the holistic design approach and collaboration between the various built environment professions. This is critically important given the emphasis on collaborations by all stakeholders embedded in the United Nations Agenda 21, seen as critical to the delivery of sustainable development. The response by interviewees shown in Figure 6.45 indicates that 73% subscribe to the holistic design and collaborations between built environment stakeholders as a strategy for delivering sustainable community development. Interviewees were further asked about the strategy of designing to minimize construction ecological footprints to which 60% responded positively by answering yes, while 40% said no.

**Figure: 6.45**




Furthermore, built environment professionals were probed further on other possible strategies for minimizing the ecological footprints of the built environment to determine whether these strategies are considered during urban development planning, and the responses are detailed in Table 6.1.

**Table 6.1 Aspects of Minimising Ecological Footprints (Buildings Selection Strategies)**

| Factors | % Yes | % No |
|---|---|---|
| Planning compact, higher average densities in Abuja and Satellite Towns | 82 | 18 |
| Vertical city (Abuja), and Multi-storey houses (Abuja and Satellite Towns | 55 | 45 |
| Sharing common spaces, facilities and external spaces | 80 | 20 |
| Renovations – adaptation of existing buildings to new uses | 80 | 20 |
| Up-grading and design adaptability | 78 | 22 |
| Careful design of buildings configuration, for instance, orientation, building size, and forms | 80 | 20 |
| Using natural lighting and natural ventilation whenever possible | 87 | 13 |
| Passive heating and cooling design | 75 | 25 |
| Designing building components that respond to climate such as sun shading, added insulation, double skin external walls etc. | 77 | 23 |
| Design to minimise waste, e.g. using modules of sheet materials and eliminating unnecessary finishes and other products | 52 | 48 |
| Providing space for food production | 43 | 57 |
| Providing space for energy generators on sites or buildings | 57 | 43 |

Accordingly, revelations in Table 6.1 have huge implications for sustainable community development, and attests to the many worrying developments in Abuja FCT. One of these is the issue of urban sprawl were high density living, despite the huge sustainability benefits, is not given the consideration it deserves. This is particularly the case when the high negative response of 45% of built environment professionals that do not subscribe to this strategy is put against the backdrop of rapid population growth of Abuja FCT fuelled by migrations from other parts of Nigeria.

Other issues were revealed in Table 6.1 which is hardly surprising and validates our findings in chapter 3 where the context of solid waste was appraised. It shows that 48% of built environment professionals that do not design to minimize waste are a major concern. Construction wastes are a major issue globally, as wastes from the construction sector account for 60% of global construction wastes. Also, decentralised energy generation and supply is currently given a global emphasis, not least because of the huge transmission loses associated with centralized grid supply system, but also, the huge costs of moving energy across long distances. Obviously from the response to this strategy of decentralised energy delivery, almost half of the built environment professionals interviewed do not make provisions in their designs for energy generators on sites or buildings. Similarly, the issue of urban agriculture is also not accorded the priority it deserves by built environment professionals in view of the revelations that 57% of interviewees make no provisions for food production in built environment designs. Of huge concerns also, is the number of interviewees that, despite the huge energy challenges in Abuja FCT, do not subscribe to passive heating and cooling design strategy.

### 6L Design for Healthy Environment

Designing for a healthy environment is pivotal to achieving sustainable community development and strikes the environmental, economic and social pillars of sustainability. Four critical questions were asked of interviewees to elicit their opinions on this particular strategy of achieving sustainable community development. The first of these questions was promoting good indoor air quality about the extent that this considered when looking or programming urban or housing development. As Figure 6.46 shows, this strategy receives overwhelming support with 98% of interviewees subscribing to the strategy. The second strategy of concern was designing for thermal comfort, acoustic, and visual comfort, all of which are critical to issues of liveability and sustainable development. As Figure 6.46 shows, 82% of built environment professionals subscribe to the strategy, with 18% not favourably disposed to the strategy.

**Figure 6.46**

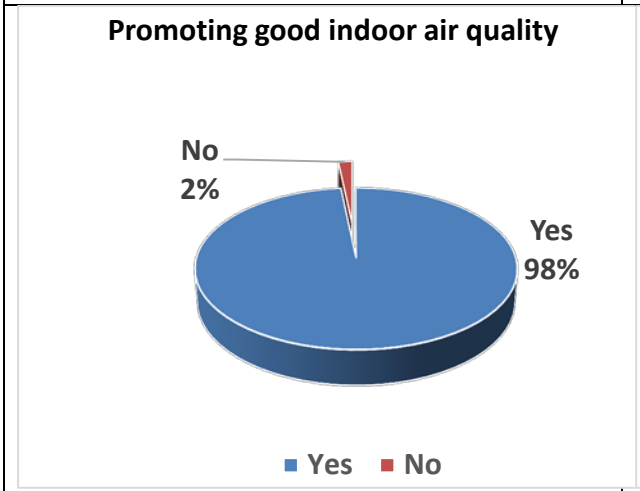



**Figure 6.47**

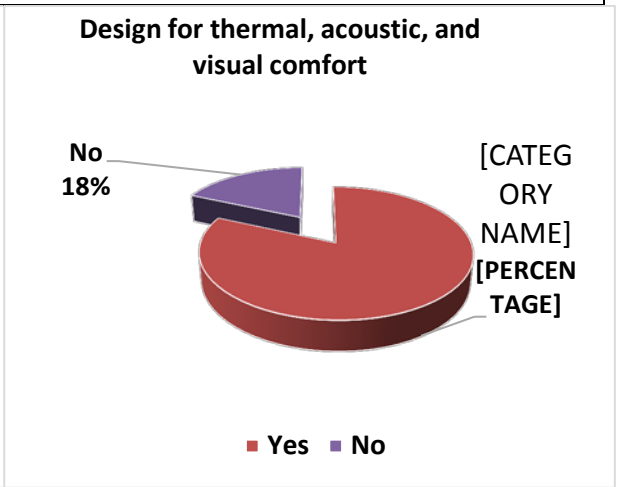



**Figure 6.48**

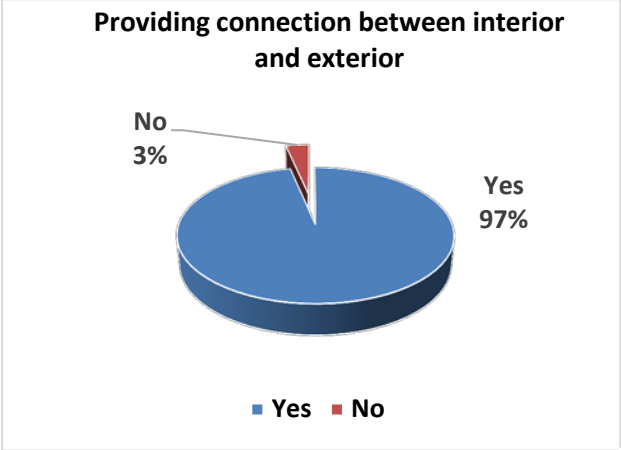
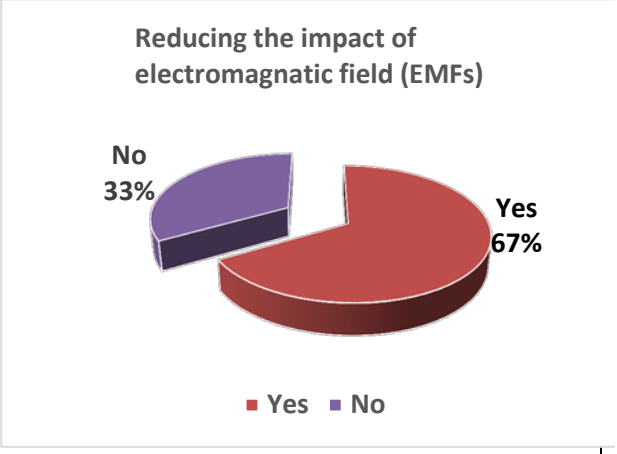



**Figure 6.49**

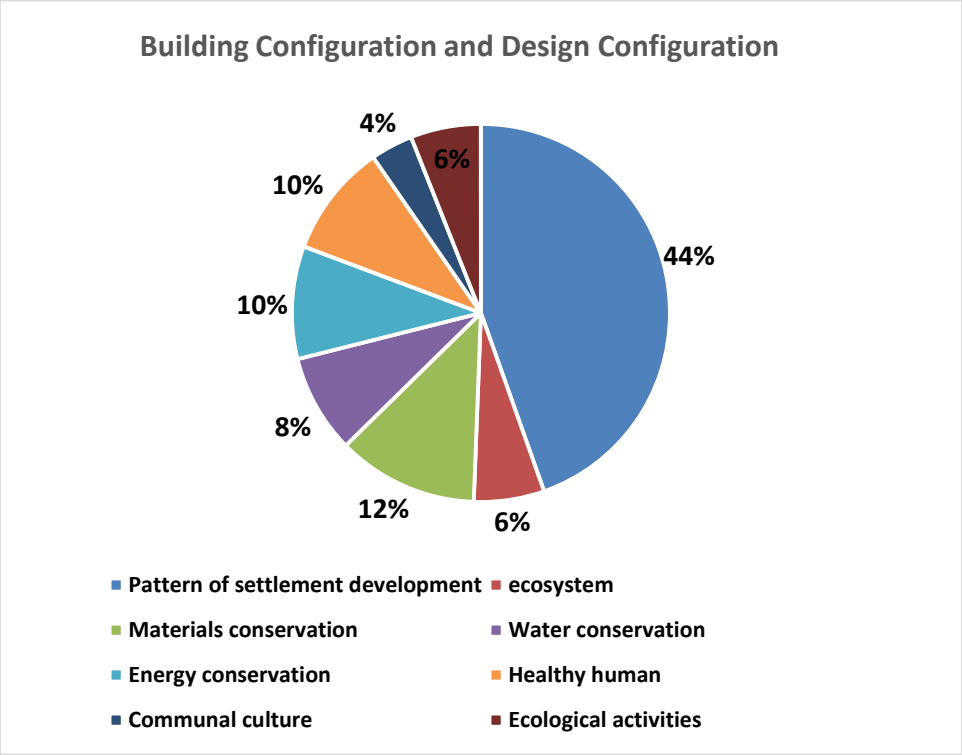



On the aspect of connecting interior and the exterior of buildings or outdoor and indoor, as a strategy of enhancing sustainable community development is greatly emphasized. Respondents were asked how this may be realized in planning and the extent to which this is considered during urban ad housing development. As Figure 6.48 shows, 97% of interviews subscribe to this strategy. However, on designing for reductions in the impact of electromagnetic fields, Figure 6.49 clearly indicates that 67% of interviewees agree with the strategy while 33% do not favour the strategy.

## 6M Issues Considered in Applying Building and Design Configuration Strategy (Physical Comfort)

When compared to other strategies that have been surveyed, built environment professionals were asked to indicate the wider sustainability issues underpinning their favoured strategies. In other words, interviewees were asked to indicate the drivers for the strategies they have chosen. As Figure 6.50 indicates, the pattern of settlements, as with other responses to other strategies considered so far, predominates. Also, material conservation ranked as the second most prominent issue underpinning the strategies chosen for achieving building and design configurations, as an overall objective for sustainable community development.

**Figure 6.50**




## 6N Design for physical Comfort and Safety

The interview questions in this section are designed to reveal the extent that built environment practitioners implement sustainability strategies of design for physical comfort and safety. As indicated in the literature, physical comfort, particularly, as it relates to safety is a fundamental aspect of sustainable community development. In the particular case of Nigeria, this is hugely significant given the significant rise in building collapse, flooding, and fire outbreaks that have been witnessed recently. In this regards, the response from

interviewees in the built environment profession in F.C.T and the issues considered while applying the affirmed strategies. Results are as shown in Figures: 6.51 to 6.57 and Figure: 6.51.

In line with the above, on whether the suggested strategy of design with ergonomic concern and avoidance of overcrowding is applied while planning and designing communities and sites in Abuja; Figure 6.51 reveals that 57% of interviewees subscribe to the strategy while 43% indicated this to be a strategy they have not employed in planning and designing in urban communities. Also, Figure 6.52 reveals that only 38% of interviewees indicated taking into consideration the strategy of accommodating people with different physical abilities such as children, elderly, and the handicapped in urban planning and housing design, while 62% admitting not to have considered this strategy of designing to the comfort and convenience of the physically challenged of urban citizens.

**Figure 6.51**

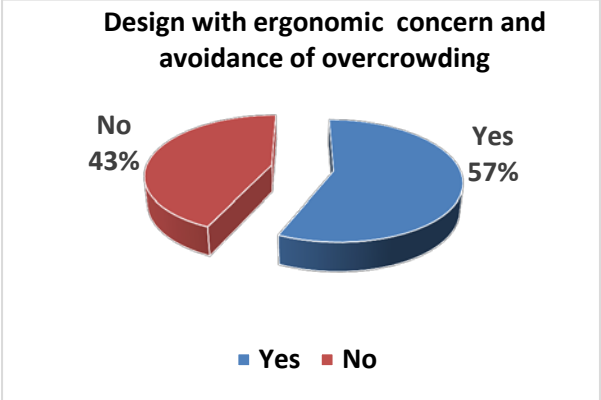



**Figure 6.52**

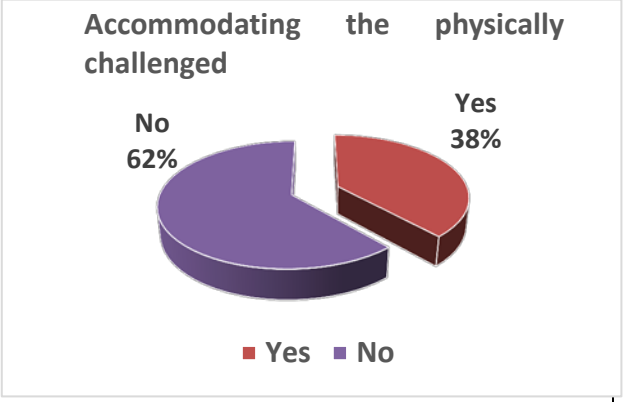



**Figure 6.53**

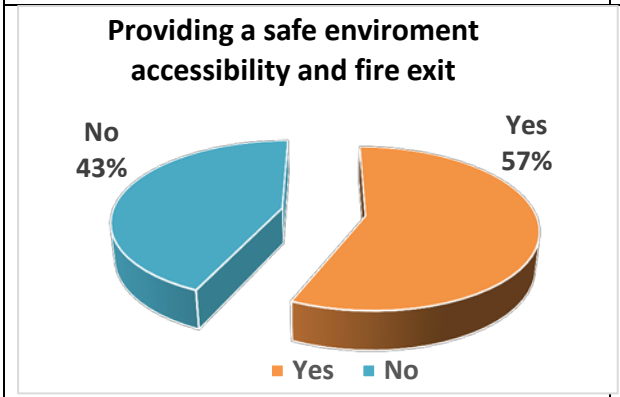
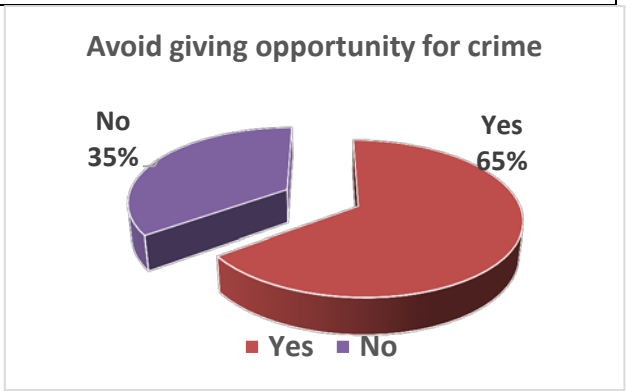



**Figure 6.54**



Thus when building professional were asked about the strategy of providing a safe environment, accessibility, and fire exit, whether these are considered during urban and housing planning and designs; Figure 6.53 clearly indicate that only 57% of interviewees said yes, affirming that they considered these while 43% admitted that they have not considered this strategy at some point whilst in practice.

Furthermore, strategy of crime prevention was put to the participants, to measure the extent they avoided giving opportunity for crime during planning for urban and housing development, and as Figure 6.54 shows, only 65% admitted to this strategy while 35% of interviewees do consider this during planning and design. Similarly, the social sustainability ethos of designing for maximum employment, particularly local employment opportunities was put to the built environment practitioners, and as Figure 6.55 shows, only 53% of participants demonstrated adherence to these strategies whilst in practice 47% did not, and this has major implications for construction industry development, particularly local capacity both in construction materials and skills. Also, Figure 6.56 reveals that only 60% of built environment practitioners pay attention to the strategy of Designing for maintenance and longevity during planning and design for urban and building development, while 40% of practitioners do not implement this strategy in practice. This has huge implications for post-construction maintenance and affordability, and may explain the high rate of building deteriorations in Abuja FCT.

**Figure 6.55**

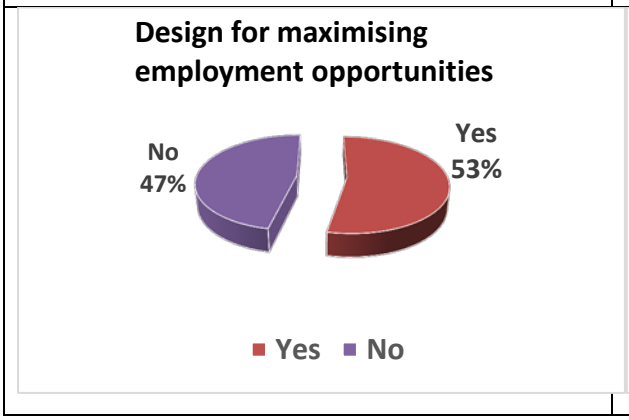
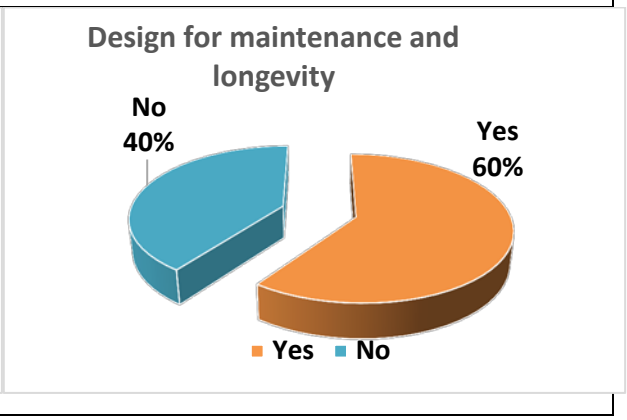


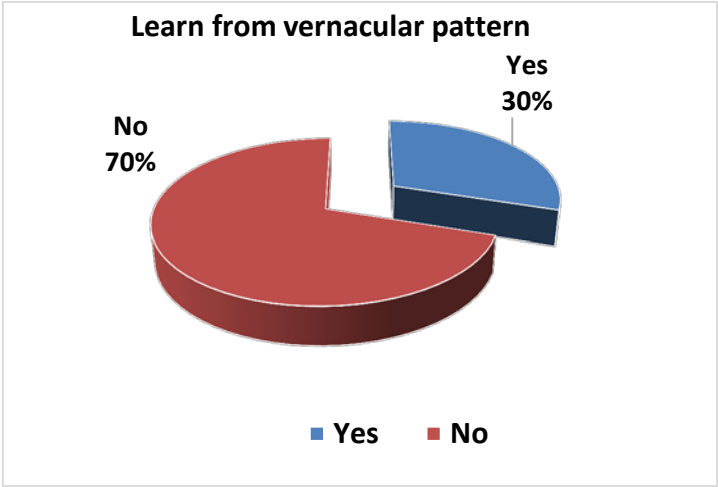

**Figure 6.56**




Overall, the strategy of Learning from Vernacular pattern is to enhance social sustainability, as urban settlements act as repositories for tradition, culture and socio-economic characteristics and values of the people. Alienation is unavoidable where these attributes are

not referenced in the urban environment, particularly housing. As Figure 6.57 shows, only 70% of interviewees reference this strategy in practice.

**Figure 6.57**




## 6.N Issues Considered while Designing for Physical Comfort and Safety

In furtherance of all of the above, the researcher sought to know the issues considered by the interviewees while affirming to the suggested strategies adopted in delivering physical comfort and safety.

**Figure 6.58**

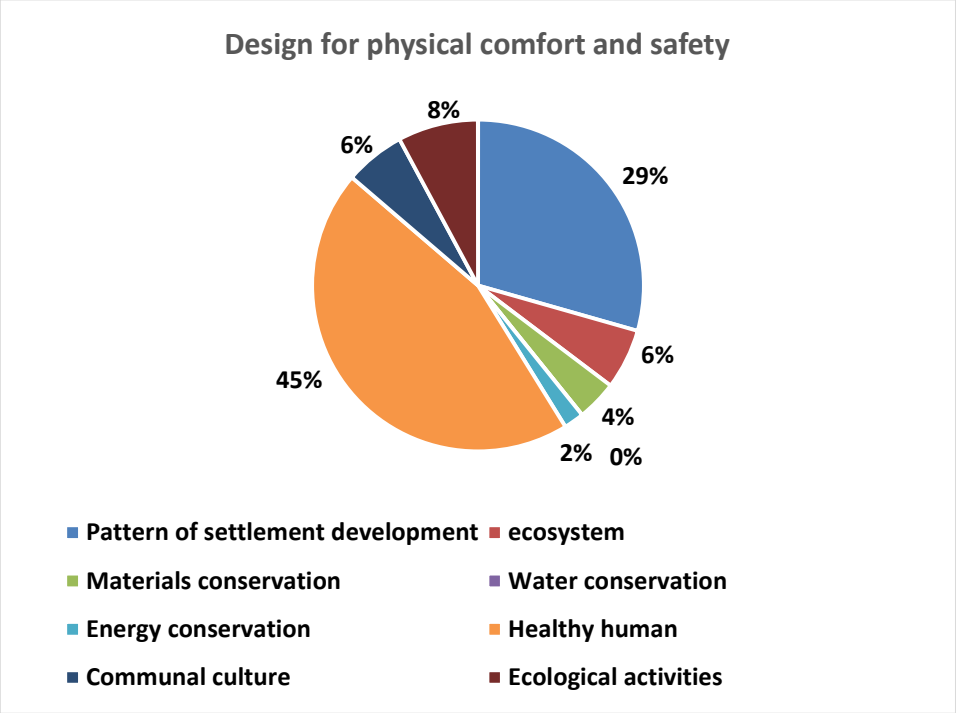
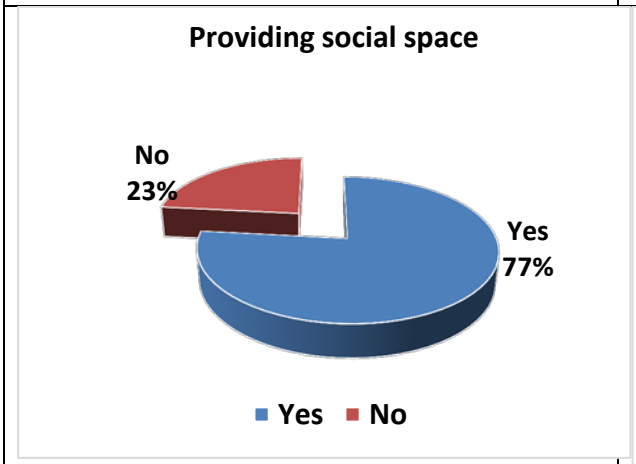
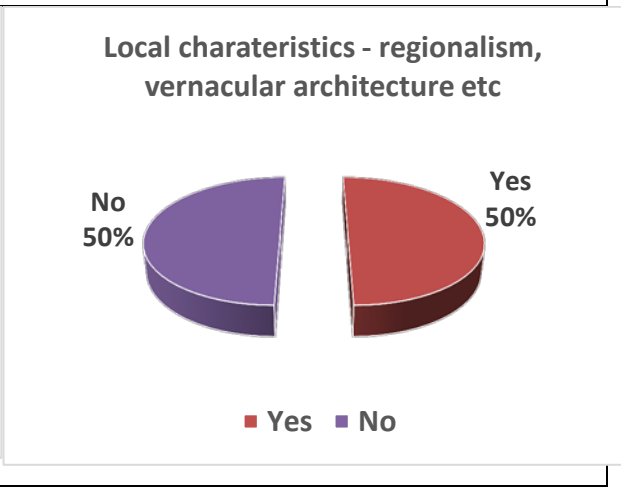


Figure: 6.58 above clearly shows healthy human environment is held by 45% of built environment professionals as the main driver of the chosen strategy to design physically comfortable and safe urban environment, including buildings. The pattern of settlement that predominated in previous analysis came second with 29% interviewees citing it as the driver behind their strategies. Issues of ecological activities followed with 8%, while ecosystems and communal culture account for 6% each, as drivers for the strategy. The results reveal the importance of human health as a major driver of strategies underpinning the design for physical comfort and safety.

**6 P Enhancing Public Image**

**T**he questions in this section are designed to probe the application of the suggested design strategy for enhancing the public image of the built environment through provisions of social space, including green spaces, meeting places, and playground, among other attributes. The strategies for designing and enhancing public image of the built environment were put to built environment professionals practicing in Abuja FCT. The results are presented in Figures 6.59 to 6.62 and Figure 6.67.

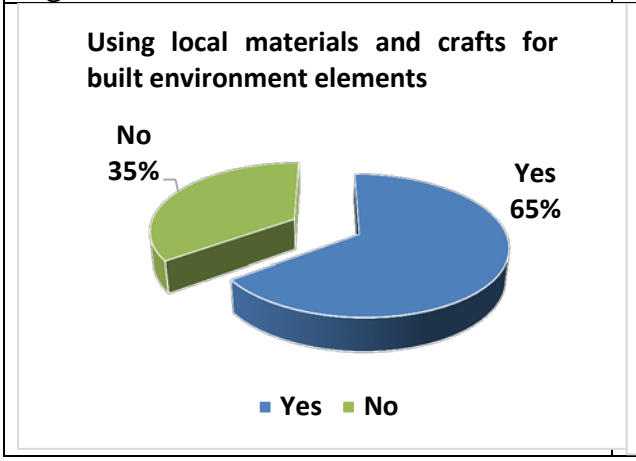
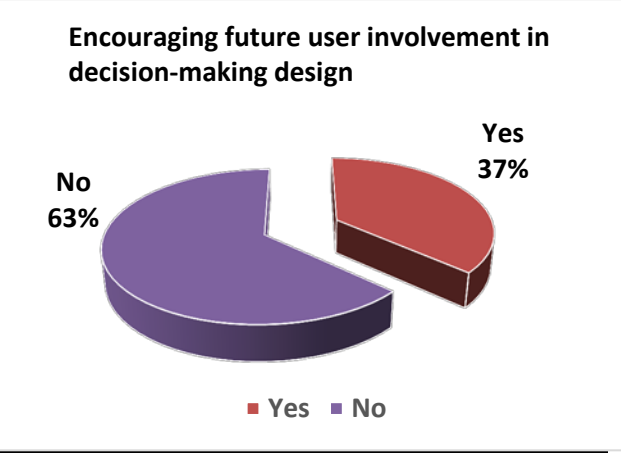
On the suggested strategy of providing social space, such as green spaces, meeting spaces and playground, interviewees were asked whether they reflected this strategy in planning housing and urban development. As Figure 6.59 reveals, 77% of interviewees subscribe to the strategy while 23% do not favour the strategy. At the same time, the interviewees were asked if the suggested strategy of local characteristics, for example regionalism, vernacular architecture, and local materials and crafts for built environment element is applied in the planning of sites and communities, Figure 6.60 reveals that only 50% consider this strategy and while 50% responded negatively.

| Figure 6.59 | Figure 6.60 |
| --- | --- |
|  |  |





However, the result of the responses by the interviewees on whether the suggested strategy of using local materials and crafts for built environment elements is applied in the planning and design of sites and communities in FCT, Figure 6.61 clearly shows that 65% of interviewees are favourably disposed to the strategy, while 35% do not reckon with the strategy. Furthermore, the results of the responses by the professionals to the question on the application of the suggested strategy of encouraging end user's involvement in decision-making in the design of the urban environment and housing is presented in Figure 6.62 Evidently therefore, only 37% of interviewees identify with this strategy while 63% differ on it.

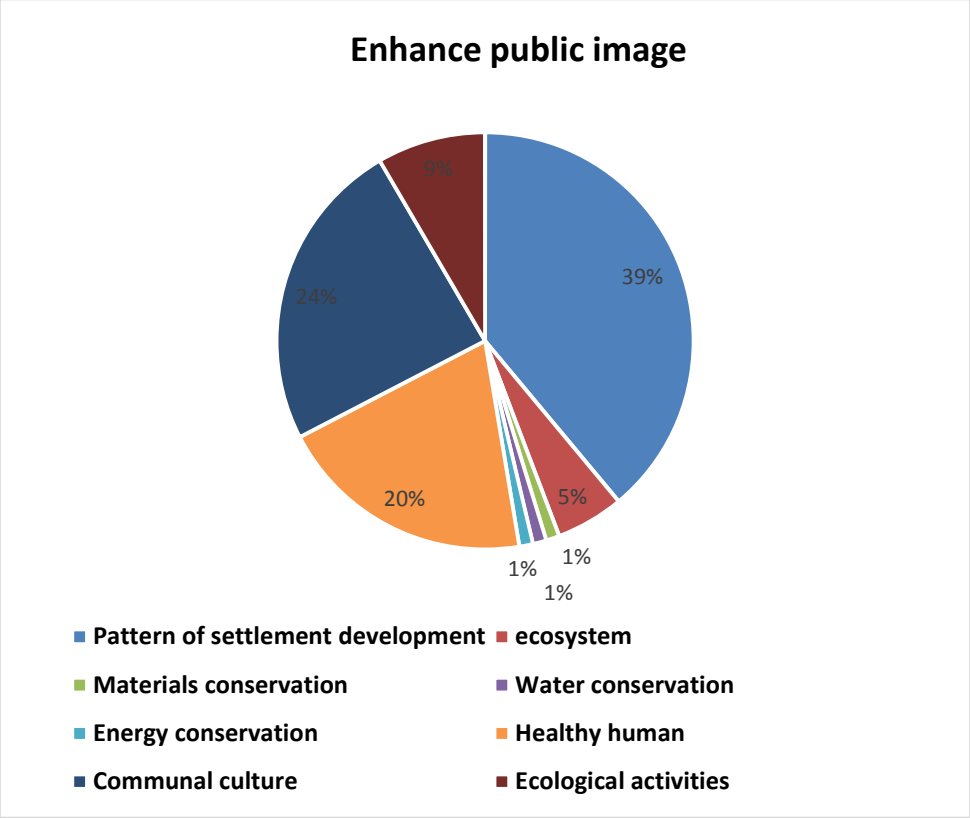
| Figure 6.61 | Figure 6.62 |
| --- | --- |
|  |  |

Clearly designing with local materials and skills is critical to both economic, environmental, social-cultural sustainability pillars of sustainability, as huge energy is saved both in transportation of materials and workers to site, and also creates local employment and income generating opportunities for the residents. In the process of using local materials and labour, further opportunities are created for social capital development.

### 6Q. Issues Considered in the Strategies for Enhanced Public Image

Similar to previous approaches, participants were asked to identify the wider issues considered to be the drivers of the underpinning strategies selected. As Figure 6.63 shows, 39% of interviewees indicate the pattern of settlement development as the main driver for the strategy adopted to enhance public image. The issue of communal culture was the second most significant factor considered with 24% of interviewees identifying with it as the main driver for their chosen strategies. This was closely followed by healthy human environment indicated by 20% of interviewees as the underpinning issue to their chosen strategies towards enhanced public urban design. Ecological activities and ecosystem were identified by 9% and 5% of interviewees respectively.

**Figure 6.63**



This figure suggests the importance that built environment professionals give to pattern of settlement development as a driver for the strategy of planning and designing of sites and communities in Abuja.

**6R Building Component Selection:**

Questions asked in this section are meant to reveal the application of sustainable community design strategy of application of Building Components selection and the issues considered while doing so by built environment professionals in Abuja FCT. Seven questions were posed all together in this section, and the responses are detailed in Table 6.2.

**Table 6.2 Aspects of Building Component Selection Strategies**

| Factors | % Yes | % No |
|---|---|---|
| Choosing materials and products with low embodied energy | 65 | 35 |
| Choosing local materials and products to reduce transport energy and attendant CO2 | 55 | 45 |
| Choosing components that producer less greenhouse gases in extraction and manufacture | 50 | 50 |
| Choosing components that produce less pollution in extraction, manufacture, and use | 45 | 55 |
| Using recycle material or recyclable materials | 30 | 70 |
| Using non-toxic materials (natural and biodegradable material) | 40 | 60 |
| Appropriate provision of possible future services | 65 | 35 |
| Rain water collection | 75 | 25 |
| Reuse water on site | 67 | 33 |
| Grey water management or central water waste management | 78 | 22 |
| Water saver appliances, such as low-flow showerheads and low flush toilets | 82 | 18 |

Evidence so far shown in the responses of built environment professionals regarding suggested strategies for building material selection clearly demonstrates the existence of

many challenges to sustainable community development in Abuja FCT. However, as regards the suggested strategy for choosing materials and products with low embodied energy and attendant CO2 emissions, 65% of professionals subscribe to this strategy but 35% responded negatively. Particularly in areas of recycle or reusable materials, 70% of interviewee do not consider this strategy at the planning and designing stages of urban and building development. Similar trends are visible with regards to the strategy for selecting non-toxic materials and that for choosing materials that produce less greenhouse gases both in extraction and manufacture, where 60% of interviewees admitted to not considering this strategy during planning of urban and housing development.

Furthermore, when asked if the strategy of choosing components that produces less greenhouse gases in extraction and manufacture is applied in the planning and designing of FCT sites and communities; 50% do consider this strategy during planning and designing, but equally, 50% do not practice the strategy. Given that Abuja is euphemistically referred to as a building site, and one of the fastest growing city in the Southern Hemisphere, professionals not adhering to the dangers posed by greenhouse gases to local, regional and global biophysical environment is worrisome, posing huge threats to sustainable community development. It is therefore important to note that built environment professionals have huge roles to play in decoupling construction industry natural resource consumption intensity. This is done by having a strategy that positively discriminates against material components that generate huge pollution in extraction, manufacturing and use of these materials; which is most effective if catered for at the planning and design stage of the development process. The responses to the strategy by built environment professionals in Abuja FCT to this question, where only 45% subscribes to it against the 55% that do not, is not surprising because of the earlier findings that only 50% of built environment professionals consider materials for use, based on their greenhouse gas attributes.

It is also instructive to note that since only 40% of built environment professionals consider the toxicity of building materials at the planning and development stage of the development process holds serious implications for sustainable community development in Abuja, particularly due to the risks of indoor air pollution. Response to the strategy of appropriate provision for possible future services is critically important for both the structural and functional integrity of urban form, particularly buildings. Response to this question shows that only 65% of interviewees consider this strategy during the planning and design stage while 35% do not take the strategy into consideration.

On the strategy of rainwater collection, 75% of interviewees indicated their commitment to this strategy, while 25% do not subscribe to the strategy. Similarly, the suggested strategy of reusing site water, only 67% consider the strategy at the planning and designing stages of the construction process, leaving out 33% of built environment practitioners that do not plan or design to these strategies. Furthermore, on the suggested strategy of water saver appliances such as low flow showerheads and low flush toilets is applied in FCT sites and communities; the results show that 82% of interviewees admitted to planning and designing to these strategies. Water scarcity is a major issue in Abuja FCT, and water conservation is critically of importance to sustainable community development, particularly when it is widely acknowledged that 40% of freshwater is accounted for by the construction industry globally.

### 6S Building Component Selection (Energy Systems)

This section concentrates on the strategy of non-polluting energy source, including if and how it is applied in the planning and site designing of residential houses in Abuja FCT. Figure 6.64 reveals that 75% of total interviewees admit to designing and planning to this strategy while 25% do not consider this strategy. Similarly, the results on central hydro-electricity or sources of renewable energy, if applied in FCT sites and communities; as shown in Figure 6.65, 85% of interviewees subscribe to this strategy. Similarly, Figure 6.66 shows that only 58% of interviewees subscribe to the planning and designing to this strategy of on-site energy, such as solar energy and biomass, leaving 42% of interviewees that do not adopt this strategy in planning and design of urban and housing development.

**Figure 6.64**

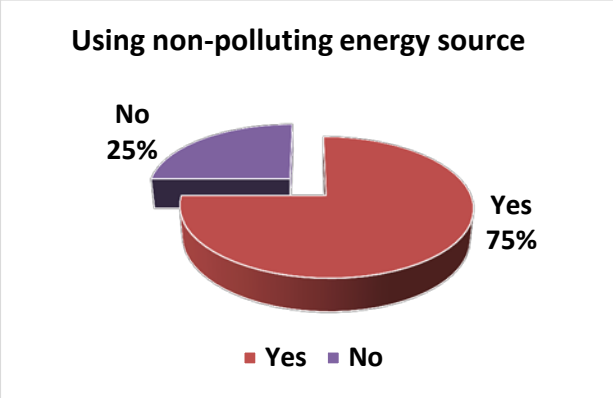



**Figure 6.65**

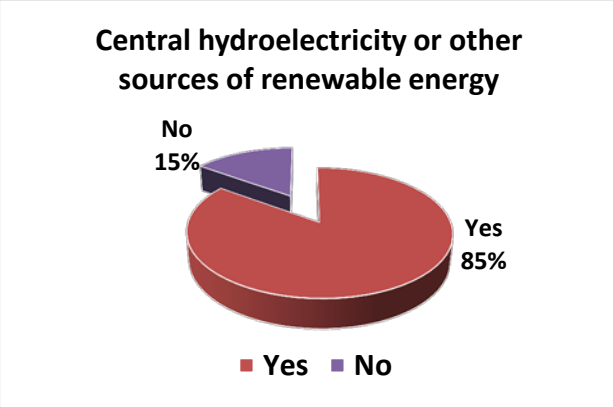


**Figure 6.66**

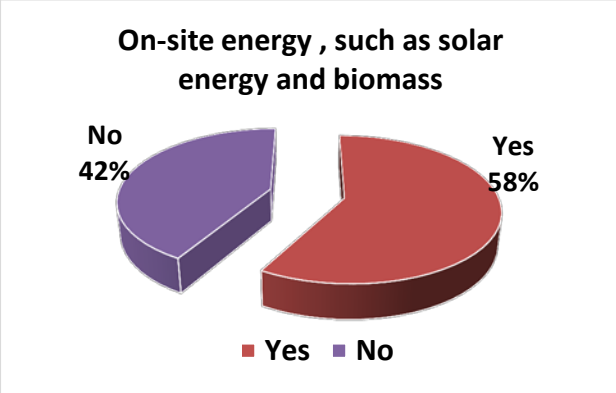
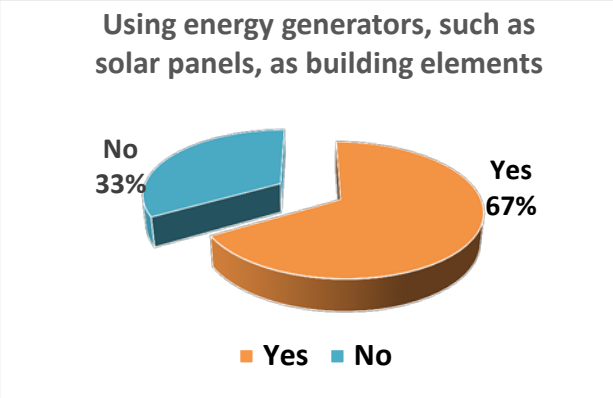
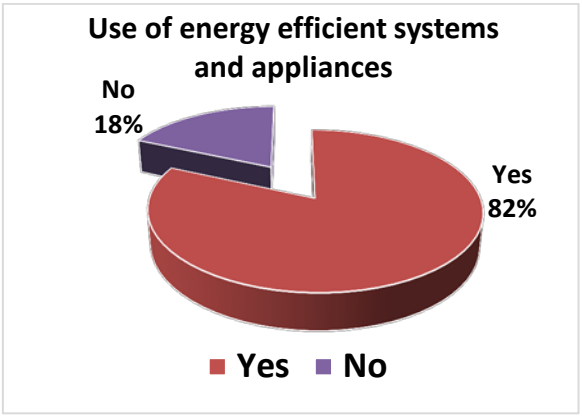



**Figure 6.67**




On the use of energy generators, such as solar panels as building elements, if applied in FCT sites and communities; 67% of professionals responded positively while 33% responded negatively, as shown in Figure 6.67. Furthermore, on use of energy efficient systems and appliances, if applied in FCT sites and communities; results from Figure 6.68, 82% of total interviewees said they plan and design to the use of efficient energy system while 18% do not.

**Figure 6.68**

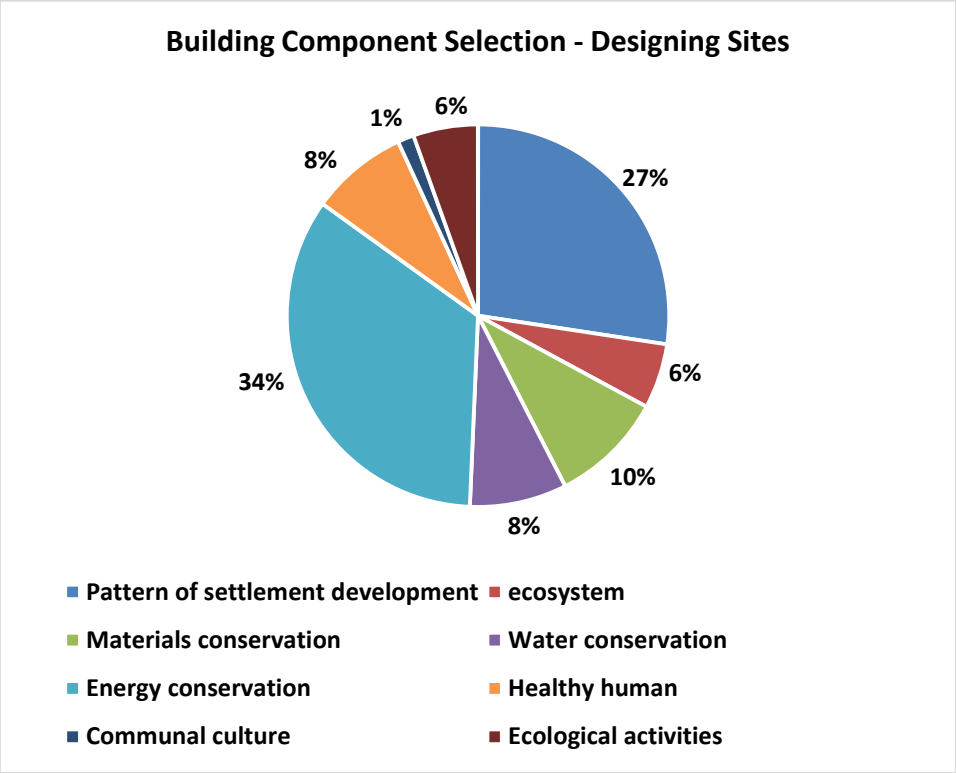



The need to subscribe to the strategies of efficient energy systems and use is particularly overwhelming given the energy and power problems in Abuja FCT where electricity supply cannot be guaranteed for more than few hours.

## 6.T Issues considered while Planning and Designing Sites

Nevertheless, professionals reveal the issue(s) considered while affirming to the suggested strategies applied in the planning and designing of sites and communities in Abuja FCT, and the results are shown in Figure: 6.69

**Figure 6.69**




In Figure 6.69, 27% of the professionals considered pattern of settlement while 34% of interviewees considered the issue of energy conservation while applying the suggested strategy of building component selection. Meanwhile, 6% each of the interviewees either considered the issue of eco-system or ecological activities while applying the suggested strategy in FCT. Similarly, 8% of the professionals considered either the issue of water conservation or healthy human in the application of building component selection as a strategy in FCT. However, 10% of them considered the issue of material conservation while only 1% of the total interviewees considered the issue of communal culture in the application of this strategy.

### 6.U Construction Technology Strategy

The questions in this section are designed to review whether the suggested strategy of construction is applicable in Abuja Federal Capital Territory sites and communities, and also to probe the wider sustainability issue(s) underpinning the strategies considered. The results of the responses are as shown in Figures 6.70 to 6.73 and Figure: 6.75

In line with the objectives, selection of modes of construction that create less impact on the environment, if applied in FCT sites and communities was the question put to built environment professionals, and as shown in Figure 6.70, 73% of interviewees admit planning and designing to sustainable construction processes with minimal impact on the natural environment. However, 27% admitted planning and designing to the strategy. Similarly, construction wastes management is a major part of global construction waste, and planning and designing to minimal construction waste is critical to sustainable community development. This question was asked built environment practitioners, if they apply this strategy in planning and designing of waste materials management strategy in Abuja. The results are captured in Figure 6.71, which shows that while 77% of professionals admit to practicing the strategy, 23% do not observe the strategy.

**Figure 6.70**

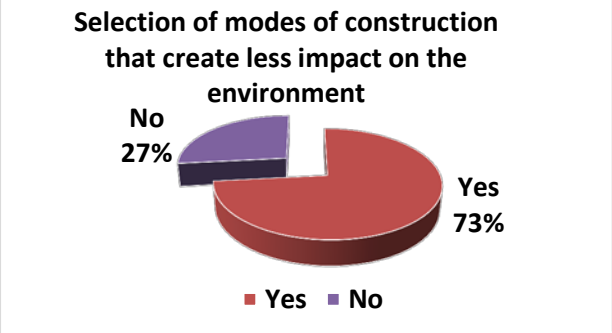



**Figure 6.71**

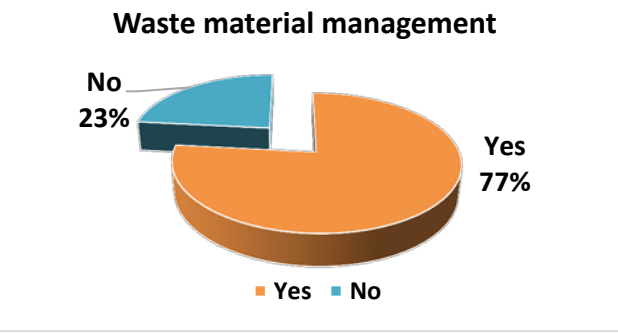


**Figure 6.72**

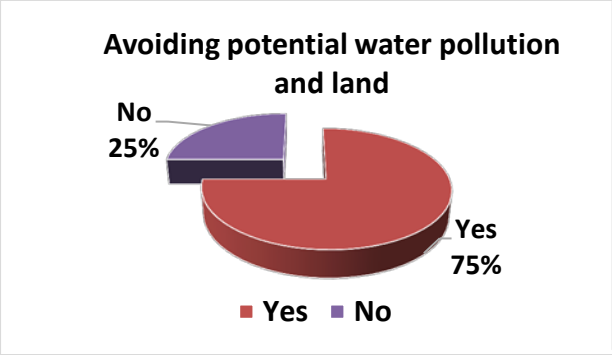
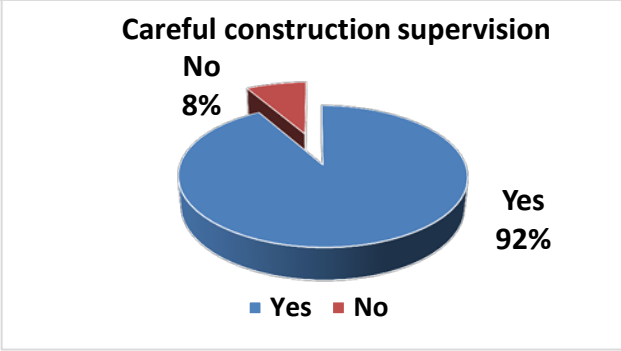
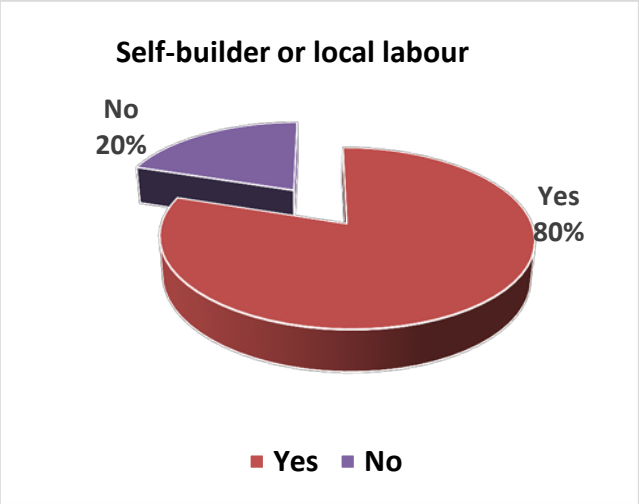



**Figure 6.73**




Furthermore, in other to avoid possible water and land pollution whenever possible including the use of environment friendly chemical killing agents is stated in the strategy for delivery sustainable communities; when the practitioners were asked if they practice this strategy. Figure 6.72 reveals that 75% of the professionals do employ this strategy while 25% of interviewees do not practice the strategy. Therefore, it is critical to consider careful construction supervision to prevent pollution and its attendant effects on the community during construction which is critical to sustainable community development. When the interviewees were asked if they plan and design considering this strategy in mind for houses in Abuja FCT; Figure 6.73 revels that an overwhelming 92% subscribe to the strategy. Practically however, whether the suggested strategy of self-builder or local labour is planned and designed to in the development of Abuja FCT by professionals was asked, and as Figure 6.74 shows, 80% of them claim they did, while 20% objected to the application of this suggested strategy in practice.

**Figure 6.74**

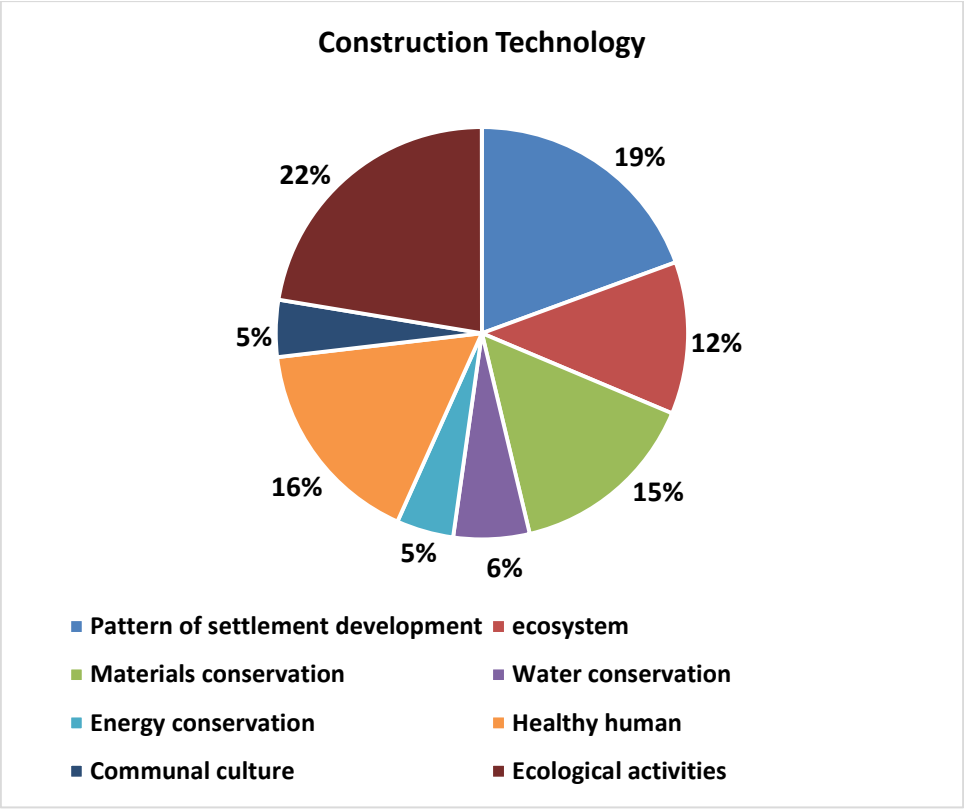



While full analysis of results commenced in Chapter 7, suffice to point out the contradiction thrown up by the Figure 6.74, given that earlier analysis shows that the strategies to make this a reality, such as planning and designing to local materials and skills for effective backward linkages with the wider economy, are not being implemented by built environment practitioners.

### 6V Issues considered while Selecting Construction Technology

In furthering the analysis, the issue(s) considered by built environment practitioners for applying suggested strategies in FCT sites and communities was investigated. The responses of interviewees are as presented in Figure: 6.75, revealing that while 19% of professionals considered the issue of pattern of settlement development in driving construction technology as a strategy, 12% considered the issue of ecosystem. Meanwhile, 15% considered the issue of materials conservation, while 6% considered the issue of water conservation in the application of construction technology strategy. Additionally, the results further show that 5% of professionals indicated Energy Conservation and Communal Culture as main drivers respectively. Other drivers indicated include healthy human issues with 16% while 22% of cited ecological activities.

**Figure: 6.75**




## 6W Summary of Findings

Apart from the findings highlighted above, this research also draws attention to some key constraints that have played a role in the development trajectory which FCT Abuja has assumed. The importance of discussing these additional constraints is that it will inform and enrich the conceptual framework to be developed from the findings of this research. The elements contained in the proposed conceptual framework include; non-compliance with the design and developmental plans and strategies of Abuja master plan, weak Linkages and synergies between governments' Regulatory Agencies and weak Developmental Institutions. Others are inadequate man power to effectively plan, design, develop and manage the physical environment, non-involvement of stakeholders in both the policy formulations and the physical development of Abuja communities, insufficient local components or content

including limited Knowledge of the concept of sustainable communities' design and development. Finally, other elements contained in the framework are low capacity building in the relevant sectors; especially in the built-environment and non-reliable regulatory guidelines and manuals. Based on all the evidence presented in this research, the study is convinced that the framework is well suited to guide professionals in attaining all the attributes of a sustainable community for Abuja as contained in Agenda 21 (UNCED, 1997; UN-Habitat, 2011).

Furthermore, the various findings from the empirical field work including the information revealed in the literature combine to show the exact nature of Abuja FCT, which explains the underlying cause of the unsustainable form Abuja City has taken. Despite the potentials it seems to holds in developing into a city of sustainable communities, relevant agencies have failed to strictly adhere to the policy documents. Abuja being one of the very few cities planned from inception, exhibits all the physical attributes of a territorial city supported and surrounded by geographical and administrative communities. This planning concept depicts conformity (Knowingly or unknowingly) with the concept of sustainable community design and development of FCT towards creating a 21st century sustainable city. Thus, the research therefore suggests the urgent need in addressing these setbacks for the concept of sustainable community development to be fully achieved and effective in Abuja. However, the researcher contends that concern should be placed more on sustainable community designs in order to achieve the sustainable development of the FCT.

## 6X Conclusion

In conclusion, this chapter provides tremendous insights into Abuja, detailing residents' views on its attributes and perspectives. This is equally matched by the responses gathered from the survey and interviews conducted on built environment professionals, whose roles, as clearly argued in the literature review section, is pivotal to the aspirations of Abuja developing into a 21st century city of sustainable communities. Findings from this chapter also show that Abuja has all the ingredients to enable it develop into a liveable and affordable city of enhanced environmental quality that offers equality of access and outcome of urban opportunities it has to offer. Not only do residents have a clear knowledge of the attributes that qualify and develop a city to one of sustainable communities, but they are aware of, not only their roles, but those of other stakeholders as well as the policies and strategies of transforming their aspirations of living in a city of sustainable communities into reality.

Sequel to the above, this chapter also reveals the conduct and performance of built environment practitioners, who are actively engaged in the physical development of Abuja, regarding their roles in transforming the city into that of sustainable communities. This was clearly defined and analysed in the literature review chapter. Furthermore, many of the findings above corroborates discussions in the literature review about the roles of the built environment professions in building sustainable communities, and the various strategies through which this can be done were surveyed on built environment professionals, resulting in the documented results above. The results clearly show that whilst built environment practitioners are aware of the strategies that influence cities' developing into sustainable communities, most practitioners do not practice them. This has major implications for the desire to have Abuja develop into a 21st century city of sustainable communities. While the empirical results and attendant implications are discussed in Chapter 7, suffice to say that this chapter has fulfilled objectives one and four which focuses on assessing the current state of sustainable activities in Abuja. It also determines the current level of application of community design strategies to the physical development of Abuja and the role of the built environment professionals in the whole equation.

# Chapter Seven

## 7 CHAPTER 7

## 7.0 Discussions and Policy Implications of Findings

### 7.1 Introduction

In chapters 5 and 6 the researcher surveyed the opinions of some critical stakeholders in the development of FCT Abuja, including residents, government officials, and built environment professionals. This was necessary partly to gain an insight to the current state of Abuja, particularly how it is functioning as a city in fulfilling the needs of the inhabitants. This was done by analysing how residents responded to a set of widely acknowledged attributes of a sustainable community design and development. Secondly and in chapter 6, the researcher concentrated on the roles of the government and built environment practitioners in shaping the processes and outcomes of the physical development of FCT Abuja. In particular, the study considered how strategies for sustainable community development are implemented in the planning and development of urban amenities, particularly housing and the urban form. That said, Chapter 7, is focused on discussing the findings and implications from these two empirical chapters (5 and 6) for Abuja to develop into a liveable city of sustainable communities affording safe and enhanced biophysical environment and access to urban equal opportunities. In such a where local economies thrive to generate employment and income generating opportunities for all citizens. In the words of Brundtland (2014):

> "The aim of Sustainable Community Design and Development is to define viable schemes-combining the aspects of Economy, Equity, Environmental, Services, Transport and Connectivity, Governance, Social/Cultural and Housing and Built-Environment to achieve desired results that fit into the template of sustainable community"

Following from the above, the attributes suggested by Brundtland (2014) form the underpinnings upon which the opinion surveyed, questions posed to residents, government officials, and built environment professionals practicing in Abuja Federal Capital Territory (FCT) were developed. Also, findings from both chapters are discussed interchangeably for two important reasons. Firstly, it enables the researcher deepen our understanding of the challenges confronting Abuja in its quest to develop into a 21st Century city of sustainable

communities, and secondly, it is easier to develop a comprehensive conceptual framework to guide development of FCT Abuja into a 21st Century city of sustainable communities.

## 7.2 Analysis and Discussion of Key Findings

The theoretical analysis discussed in the literature reviews and findings from the empirical chapters show that FCT Abuja has tremendous capacity of developing into a 21st century of sustainable communities. Particularly considering the analysis of the Abuja Master Plan, which was found to be ahead of its time given the inherent attributes conforming to many of the ethos emphasised by sustainable development experts. However, it is equally the case that there are other aspects of sustainable community design and development that were not present in the Abuja Master Plan, particularly in areas of socio-cultural sustainability that emphasises equity and social justice.

Therefore, it is important to stress that all findings in this study are critical to the success or failure of designing and development of sustainable community. However, there are some key findings chosen for discussion which will clearly show the challenges and opportunities that exist there with the view of developing Abuja into a city of sustainable communities. Although housing and the economy including equity featured quite prominently amongst the aspects of sustainable community design and development, the issues of governance and transports as well as connectivity made more prominence. To appreciate why transport and connectivity is of so much concerns, a look at Figures 3.17 vividly illustrates the physical hardships suffered by households in conducting their daily lives in Abuja FCT.

Apart from the huge environmental implications (UN-Habitat, 2012; Moen, 2008), the financial costs associating with travel time and the proportion of income devoted to transportation impose huge financial burden, and this is disproportionately suffered by low income households. Indeed, Figure 5.1g clearly shows that half of all the households surveyed, spend between 11% and 15% of their monthly income on transportation. This also has other social implications that if not checked could eventually transform into the environmental problems of urban sprawl, which was rightly observed as becoming a major problem in FCT Abuja. Furthermore, most vacant lands in Abuja are frequently invaded and transformed into illegal and informal settlements to reduce the financial burden imposed by inadequate transport facilities, particularly transport connectivity to places of economic and leisure interests. As shown in the literature review, the impact of inadequate transport,

transport connectivity, and attendant costs on urban equality, particularly equality of access and outcome of urban opportunities is well established in the literature chapter (Sustainable Cities International, 2012).

Hence, the question that therefore arises is; can Abuja develop into a city of sustainable communities without a diversified transport modes of travel, particularly mass transport system such as the combination of bus and rail transportation system (BRT) seen to be functional in Curitiba Brazil? This is urgently needed, not least, the spatial formation of Abuja FCT with FCT being the seat of government, and independent Area Councils to which government parastatals will be located to disperse the population and prevent the scenario witnessed in Lagos where millions of people move in one direction in the mornings going to work, and in the evenings, returning home. It comes as no major surprise that 78% of households surveyed considered transportation as a key feature of a sustainable community. But it is worthy of note that it is not just insufficient number and variety of transport modes, but also the question of reliability and safety of transportation services which are other issues raised, that can immediately be given attention in order to alleviate current transport difficulties in FCT Abuja. Similarly, the lack of pedestrian walkways and bicycle routes significantly limits the potentials for alternative modes of travels, and this can also be addressed relatively quickly.

Following from the above, other services that are of concern specifically those attached with many priorities include energy, water, housing, and open green spaces for leisure, particularly for children. Also particular attention must be given to the approach favoured by residents to have these services delivered effectively and efficiently. The lack of grassroots participation in the planning, designing, delivery and management of these key services is frowned upon by residents who believe their participation can open up huge opportunities. The benefits of this can be seen in the residents, many of whom operate in the private sector, contributing critical management expertise to the management of these services. In particular, residents' views of procuring these services under public private partnerships (PPP) have huge merits because of the competing demands for government financial and human capital.

The merits of PPP are equally significant in other areas in ensuring the implementation of urban planning rules and regulations in FCT Abuja. However, this is a major challenge for

the planning and development authorities, particularly in areas of development controls and urban maintenance.

Furthermore, these are areas where the private sector can certainly make a difference in the functionality and provision of quality infrastructure and services. This will have extreme impacts on the design and development of sustainable community including the process and outcome of sustainable development, thus enhancing not just the capacity to deliver, but also manage and implement urban regulations, particularly development controls. Specifically, are some of the issues concerned with the housing sub-sector. Here the residents believe that there exists the inability to enforce some existing housing rules and adapt policies and strategies to the rapidly changing circumstances on ground have contributed immensely to inadequate supply of affordable housing in the FCT. As discussed in chapter 5, some respondents highlighted the practices where developers submit proposals for low-cost housing and are subsequently allocated government lands which are later developed into luxury apartments that are beyond the reach of low-income households. This process of award must therefore be reviewed with a view of eliminating all related fraudulent practices associated with allocation of housing lands.

The views expressed by many respondents' as it concerns question 9 are extremely instructive to note being a key aspect of the affordable housing initiative. Residents hold the view that affordable housing should form the cornerstone underpinning planning gains negotiated with potential developers. This serves two purposes, and the first is that it will enable the volume of affordable low-income housing to be made available much quicker and efficiently. Secondly, it facilitates mixed-use developments where low-income households live side by side affluent households, discouraging the ghettoization or concentration of low-income households on marginal lands, which leads to slum formation. This also leads to the formation of social problems which is inimical to the principles of sustainable community development.

The emphasis by residents, not just on wider participation in urban development, but the bottom-up approach to the planning, design and management of the infrastructure and services is one that must be taken seriously, if Abuja is to develop into a city of sustainable communities. There is overwhelming supported by 78% of the majority of residents surveyed who see lack of consultation as one of the key reasons for the low participation rate in governance. Like previously established in the literature review, decisions made for a

community without the involvement of the community, does not only constitute ineffective governance, but also invites alienation from projects constructed. Alienation from participation discourages a sense of civic pride and ownership as rightly postulated by Peck et. al, (2002; Egan, 2003 Stanton-Geddes, et al., 2013). The response to question 13 by residents, clearly indicates their awareness of not only the importance of dialogue between all stakeholders to sustainable community development (UNCED, 1997), but also how to constitute effective engagements with a cross section of other stakeholders. Emphasis and references to advocacy, sensitization, pressure groups, and above all the use of legal processes to engage with urban authorities is instructive, and falls within the attributes identified by Cook (1985) as constituting community development.

At a more practical level, respondents were also able to identify the roles individuals can play that will facilitate and enhance sustainable community development, and these range from living by example to sensitising the community on behaviours at different scales – individual or community levels, that could undermine sustainable community design and development. For example, the results suggest that respondents are quite aware of the impact of climate change on Abuja including the various forms and dimensions the impacts manifest. Above all, respondents are conversant with the actions and measures across different scales and measures deployed to mitigate and adapt to climate change impacts. However, the necessary framework must be put in place to facilitate an enabling environment for wider participation by all stakeholders to participate in the design and development of sustainable community.

It is equally vital to point out that the findings from the interviews and survey on built environment professionals confirms the unique position of built environment professionals in developing Abuja FCT into a 21$^{st}$ century city of sustainable communities. As critically analysed in the literature review, built environment professionals, as place makers, have a pivotal role to play in the design and development of sustainable communities (Chansomsak and Vale, 2009; RIBA, 2001; Aliyu et al 2014; and UNEP 2004). Thus, the case of Curitiba, the role of built environment professionals in Sustainable Community Development is aptly demonstrated. Underpinned by the planned, well designed and managed city that have been transformed into a world referenced city is an example of what is possible in Abuja based on functional institutions, enabling environment, the political will, and appropriate resources. Findings from the survey and interviews also show that the majority of built environment professionals practicing in Abuja FCT are not only conversant of their roles, but with the

critical strategies that feed into the processes of design and development of sustainable communities. More importantly, they clearly are able to anchor these strategies on a wider sustainable development issues. In other words, they understand the drivers of sustainable community development and know the relevant and most appropriate strategies could be applied.

However, there are three main concerns from this research that stand out from the findings, which if ignored will compromise the development of Abuja into a city of sustainable communities. Firstly, there is apparent disconnect between what built environment practitioners know and what is delivered in terms of urban form, particularly buildings. The question then is; why is it that these strategies are not mainstreamed into the design and development of urban forms. Numerous examples of modern buildings across domestic, commercial, and residential subsectors of the property sector are mostly devoid of sustainability strategies that built environment professionals supposedly should be aware of. In particular are the daily challenges experienced in epileptic electricity supply, scarcity of petroleum products and water shortages, which were all suggested strategies. Important elements pointed identified above such as; materials, energy, green spaces, vegetation, passive heating and ventilation as well as construction, necessary for achieving sustainable community development are conspicuously absent. Rather one is often confronted with buildings with dotted number of air-conditioners that are themselves inoperable, owing to lack of electricity supply. The same applies to urban form whose layout is anti-people and mainly favours car users.

The findings that 70% of built environment practitioners in Abuja do not emphasis the use of recycle or recyclable materials in the design and development of urban form and buildings have huge implications for waste disposal, material consumption intensity, and pollution generally. Subsequently, the findings that 60% of professionals do not consider the strategy of embodied energy in designing and developing urban development represent a missed opportunity of decoupling energy from economic growth.

Another issue of concern from this research is the lopsided focus and understanding of the concept of sustainable development, resulting in the overt focus on the environmental and economic pillar, however to a limited extent and less emphasis on social sustainability pillar of sustainable development. Nowhere is this more evident than the responses to suggested

strategies and issues relating to social sustainability. The result suggests that 53% of built environment professionals do not design and develop urban form and housing to the strategy of maximising employment opportunities. Also 70% pay no regards to vernacular design and patterns, as precedents; and 50% of built environment professionals do not design to local characteristics of regionalism. In other words, social sustainability strategies remain after thoughts to most built environment professionals in Abuja FCT. It has however been observed that this was not peculiar to Abuja, and it is often mentioned in passing by most built environment professionals (McKenzie, 2004). Thus, there is a lack of awareness of the huge socio-cultural significance of designing to local materials and skills, particularly of forging backward and forward linkages between projects and the wider economy. Such links create huge employment and income generating opportunities which reduces poverty and inequality, and enhance social capital formation, all of which are critical to sustainable community development.

The third concern from the findings in this research is that, in spite of the numerous government agencies, departments and parastatals established for the planning, designing, development and management of Abuja Federal Capital Territory (FCT); traffic congestion, inadequate services, growing and deepening inequality, and environmental degradation and pollution unfortunately still prevails. In particular, there is no evidence suggesting a systemic approach to the management of Abuja in that there are not facts that these bodies were working together in a manner that is likely to lead Abuja towards a city of sustainable communities. What this exposes also is the lack of a critical framework that will guide professionals involved in Abuja FCT development into a 21st century city of sustainable communities.

## 7.3 Policy Implication of Findings

The intention of this study is not to drift away from the planned implementation of the Abuja Master Plan, but to propose a sustainable way towards the achievement of the principles on which Abuja was created; and for the capital city to develop into a 21st century world-class city of sustainable communities. The Abuja master plan whose implementation has been severally altered, albeit negatively, was created to solve the problems Lagos started exhibiting since the 1970s. Thus the challenge is to focus on developing the capital territory on a sustainable basis. The research findings discussed above has several implications. A full and effective participation of all stakeholders, the government, residents, and civil societies is

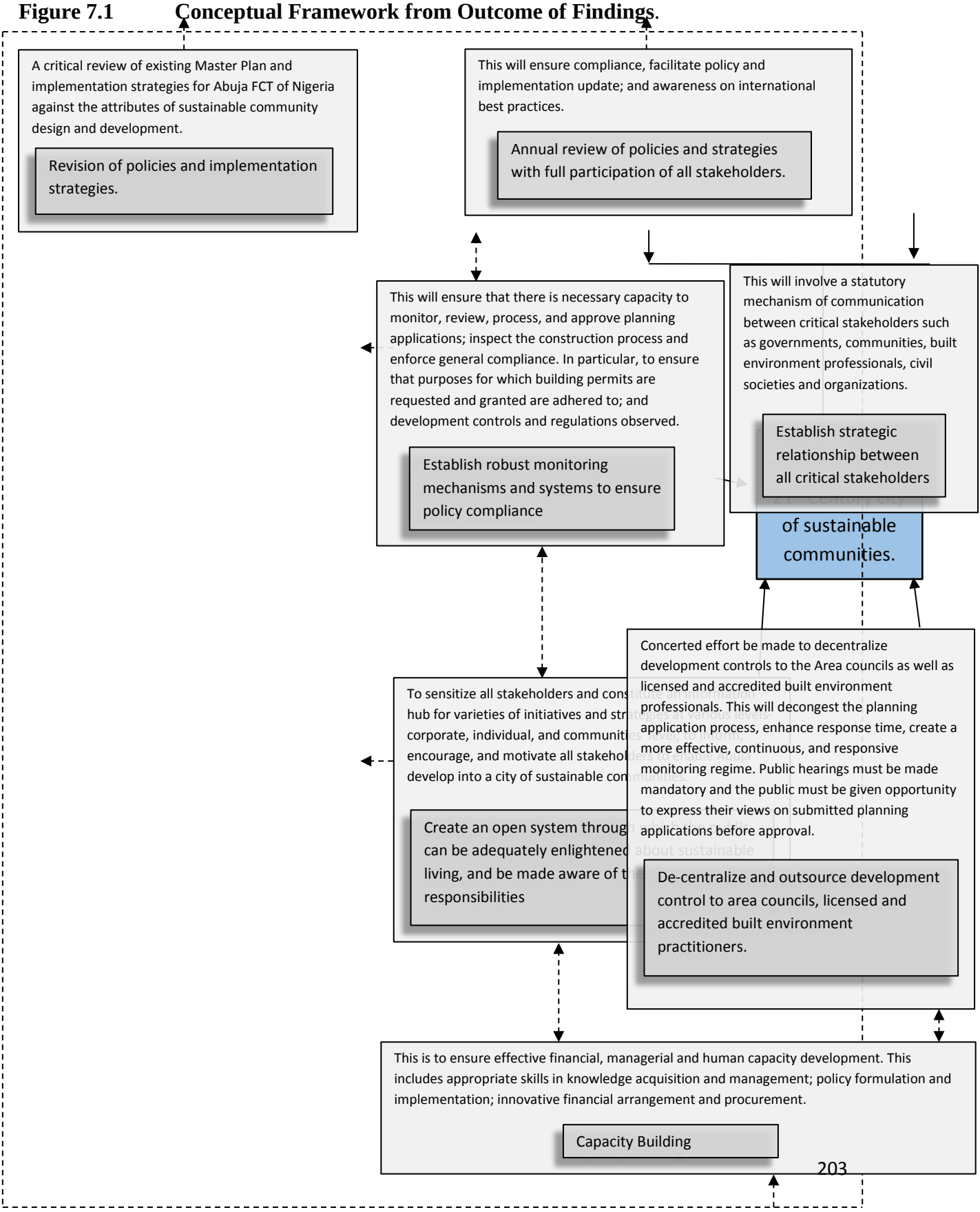
vital, if Abuja is to develop into a city of sustainable communities. Also, mechanisms must be put in place to ensure periodic and continuous review of the implementation of the Abuja Master Plan. This will afford, not just the opportunity to identify possible challenges and decide on appropriate responses, but above all, it will put a check and largely mitigate the regular violation of the Abuja Master plan by government and individuals' interests.

A further implication of the findings is that various governments' regulatory agencies tasked with the responsibility of developing Abuja must work towards a common goal and in accordance to approved guidelines that all stakeholders can take ownership of which however can only happen only with wider participation. In other words, a comprehensive approach is urgently needed to guide the city's development. The government must review the current heavy top-down approach to decision making that, not only alienates other stakeholders but overwhelm them as well. As such, all development and regulatory agencies in Abuja FCT should be encouraged and facilitated to have sustained inputs to the methodological adherence to the existing development plan of the city to ensure that all projects are fit for purpose, and delivered in the sufficient quantity and time frame. To achieve this, the government must come to realise that there is a limit to its capacity to deliver relative to other competing demands for available resources. The government must therefore create an enabling environment for wider participation by the private sector, and pave the way for Abuja to develop into a city of sustainable communities. However, this will require an effective framework, and building on the findings from the study. Consequently, section 7.3 below is dedicated to developing a conceptual framework that all stakeholders can draw upon to guide Abuja towards its aspirations and destiny.

## 7.4 A Conceptual Framework for Designing and Developing Abuja FCT into A City of Sustainable Communities

In view of the implications of the research findings above, a conceptual framework on the sustainable development of Abuja, the Federal Capital Territory of Nigeria is developed and presented below in Figure 7.1, and this constitutes a major outcome of this research study.

**Figure 7.1 Conceptual Framework from Outcome of Findings.**



## 7.4 Discussion of the Conceptual Framework

It is important to note here that all conceptual design frameworks that evolve through empirical data gathering and analysis have their individual research purposes. In the light of this, the above framework is designed to provide an authoritative guide for built environment professionals in actualising the idea of developing Abuja Federal Capital Territory into a 21st City of Sustainable Communities. The pivotal functions of the framework include should involve, amongst others, a critical review of all existing Abuja Master Plan and implementation policies and strategies against the fundamental concepts, principles, and attributes of a sustainable community (Sustainable Cities International, 2012).

There should also be an annual review of policies and strategies with the active participation of all critical stakeholders. The importance of this element of the framework is to allow for a standardised compliance amongst stakeholders, on the one hand, facilitate policy and implementation updates, and create necessary awareness of international best practices, on the other. Additionally, it facilitates continuity, particularly in a fluid political environment such as obtains in Nigeria where policies and strategies can easily become casualties of change. This will bring stability and assurances to practically demonstrate commitments of government agencies to stakeholders' engagement, as well as consistency in their operations. Hence, an annual survey of opinions and views of community leaders across local communities to gauge their challenges and strength in contributing effectively to policies and strategies is essential. This is particularly the case regarding implementation of existing polices and strategies. Also, engaging municipal local council areas' representatives and other stakeholders such as built environment professionals, as well as private investors, this will create a robust approach to implementing the standardised framework agreed between all stakeholders in a consistent manner that will enable them take ownership of policies and implementation strategies (UNCED, 1997; RIBA, 2003; Cook, 1985).

The above framework for attaining sustainable community development in Abuja with all its complementary attributes as contained in Agenda 21 of the United Nations Rio declaration (UNCED, 1997) has also identified the importance of capacity building. This will resonate with financial, managerial and human capacity development. It also would entail detailed approach in building appropriate skills in knowledge acquisition and management, policy

formulation and implementation and innovative financial arrangement and procurement. In essence, those personnel, within the rubrics of all stakeholders, who are involved in the formulation and implementation of sustainable development policies, must be adequately trained on sourcing and management of resources for achieving stated objectives of the policies. This is to enable them better advice and guide political educate leaders towards best international practices in urban development whilst ensuring well developed and functional public and private institutions that will continually inform policy and implementation strategies.

Furthermore, there should be an establishment of strategic relationships between critical stakeholders were they should all walk in the best interest of the overall objective of designing and developing FCT Abuja into a city of sustainable communities. Rightly suggested, there should be an establishment of clear communication mechanisms, with statutory powers, that would help foster unhindered interface between critical stakeholders such as; government, communities, built environment professionals, civil societies and their representatives. Arguably, this approach will close the policy implementation gaps observed in the inability of government institutions to give policy feed forward to residents and community stakeholders and gather feedback on challenges experienced by professionals and civil society groups monitoring policy implementation and effectiveness.

The researcher also advocates in the above conceptual framework the establishment of a robust monitoring mechanisms and systems that would ensure policy compliance starting from the design stage to actual delivery of buildings. This will adequately ensure the deployment of every necessary capacity to monitor, review, process and approval of planning applications which would effectively eliminate fraud in the execution of approved planning permits by both built environment professionals and private individuals. Also, there should be an effective capacity to inspect the construction of ongoing projects across Abuja through a decentralised network of trained ad-hoc monitoring personnel across all central and local offices inspecting all construction works and general policy compliance. This will specifically ensure that the purpose for which building permits are requested and granted are adhered to, and development controls and regulations are strictly observed.

Closely related to the above is the need to create an open system through which the public can be adequately enlightened and educated about sustainable living, and be made aware of their obligations and responsibilities. As the empirical results from this study shows, serious

lack of public awareness of the concept and principles of sustainable community development together with the government's policy drive. Effective public awareness is necessary, and this should involve weekly, monthly or quarterly meetings between community leaders and their representatives with the leaders in the various council areas. At such fora the community leaders would be equipped with up to date information on what the government expects of them and how they can meet their obligations and responsibilities. These community representatives would then be empowered to enlighten residents of homes in their various communities on how to consistently adhere to sustainable living. Another element of this approach is that it will sensitise all critical stakeholders and constitute an information hub for varieties of initiatives and strategies at various levels such as; corporate, individual, and local communities' levels. Including informing, encouraging and motivating all stakeholders to enable Abuja develop and evolve into a city of sustainable communities. Critically though, a mechanism must exist where stakeholders' views are collated and channelled to government for inclusion in policies and strategies.

Finally, the framework proposes a decentralised outsource Development Controls to Area Councils, and also the involvement of built environment professional with the expertise to monitor compliance. This is necessary in recognition of the fact that the government has not got the resources to police all construction activities taking place in Abuja. It is very necessary for the government to have in place, a scheme by which built environment professionals in the areas of planning, structural engineering, building technology, building surveying and estate management can be licensed and accredited to take the roles of two critical aspects of building inspections; namely:

- Building standards verification (**BSV**),
- Adherence to plans submitted and approved for construction.

The licences for this role should be issued for a period of 5 years by which date it comes up for renewal. A rigorous system and criterial, to be made transparent and put in the public domain, including:

- Set minimum of continuing personal development (CPD) facilitated and attended;
- Continuing membership of a built environment profession(s)
- Approved inspector registers to kept, updated, maintained, and made publicly accessible

- A guide to fees and time frame for duties to be discharged to be established, this is to prevent abuse
- An ombudsman must be created and given powers to delist erring inspectors that clients can present appeals. This is necessary, as it is often the case in the Nigerian context where individuals can be more powerful than the institution of state, to avoid inspectors becoming a 'law on to themselves'.

This effectively takes care of short falls in policy implementation and bridges a critical aspect in the policy monitoring and reviews. This should be one obvious step towards a decentralised development control to the various Area Councils as well as licensed and accredited built environment professionals. The benefits are enormous, if successfully implemented, and these include decongestion of the planning application process, enhancement response time to planning and inspection application, and as well as creating efficient, continuous and responsive monitoring regimes. Above all, public hearings should be made mandatory and the public must be given the opportunity to express their views and opinions regarding any planning application submitted before approval are granted to ensure that it follows the outlined strategies and policies, as well as the working parameters jointly arrived at and set by all critical stakeholders.

**7.5 Summary**

In conclusion, the researcher has successfully presented key elements of the research findings in this chapter and also established how they affect the attainment of sustainable design and development policies within FCT Abuja with the design and presentation of a conceptual framework that will serve as guide to professionals in sections 7.1 to 7.3. Also, relevant literature sources were used to buttress the discussion including in the detailed discussions on the various elements that makes up the conceptual framework. It must be noted that the conceptual framework design came about as a result of a thorough analysis of all data and information collected through the research process which relate to answering the research questions and achieving the stated objectives. This became partly necessary because of the difficulties observed in the formulation and implementation of sustainable development designs anchored on the attributes established in Agenda 21 (UNCED, 1997) in Abuja for a long time. Hence, the above framework is clearly positioned to serve as a strategic tool in the hands of critical stakeholders in achieving the design and development of FCT Abuja into a city of sustainably developed communities in the 21$^{st}$ century.

# CHAPTER 8

## 8.0 Conclusion and Recommendations

### 8:1 Introduction

In this chapter the researcher sets out the final phase of the entire thesis. Drawing a conclusion on the study highlighting all the key issues discussed whilst touching on how the objectives have been achieved and the research questions answered. The limitation of the research is also discussed here whilst areas which other researchers would possibly cover in future research were suggested. The principles of sustainable community development are shown as necessary prerequisite to a 21st Century functional and resilient City of Sustainable Communities. Therefore, the conceptual framework designed and presented by the researcher in chapter seven above will guide Federal Capital Territory Administration (FCTA) in Nigeria including the Federal Capital Development Authority (FCDA) as well as Built Environment practitioners. However, this will only happen when relevant agencies effectively apply the principles of Sustainable Communities' Development as a guide in the implementation of the Abuja Master Plan which is focused towards making rational decisions in line with Global best practices. Also, the conceptual framework will serve the needs of both urban decision making stakeholders and practitioners in the conduct of their critical duties.

Five key objectives were formulated at the start of this study which the researcher believes will help achieve the main aim of the study. The first objective was to assess the current state of sustainable activities in Abuja, if any, through the Abuja Master Plan Implementation in the design, development and management of the various communities within Abuja, Federal Capital Territory of Nigeria. This was investigated through a critical review of Literature, field study carried out across Abuja Communities and Satellite towns by the researcher. In addition, data was collected using the open and close-ended questionnaires in addition to structured and unstructured interview with built environment professionals practicing in Abuja. Furthermore, the principles of sustainable community design, development and management were developed through analysis of data from the field and cross-tabulation of variables in chapter six. From the investigations carried out, a great percentage of respondents supported the need for the Communities (Area Councils) to be the focal point on development based on the principles of sustainable community designed and development.

Overall, the study shows that implementing the Abuja Master Plan in a sustainable manner is based on the principles and concept of sustainable community design which was carried out using the stated objectives serving as guide

Furthermore, the researcher's visit to all Area Councils in the FCT revealed that the concept of sustainable community design and development hardly existed in any of the communities visited. Apparently and quite regrettably indeed, the development in these places has taken the pattern of slums which technically relives the Lagos urban slum phenomenon once again in Abuja. It further gave an insight that if Federal Capital Development Authority reviews the Abuja Mater Plan, it should thereafter be adapted to reflect the principles of sustainable communities' design and development. This will see the Federal Capital City evolve into a sustainably developed 21st Century City like Curitiba in Brazil. Consequently, the aim of this study is to investigate the application of the principles of sustainability on designs, development and management of the various Communities (Area Councils) within Abuja. All these objectives were successfully achieved.

The second research objective was to establish the potential impact of sustainability principles and practices through various communities' designs in the FCT and determine their impacts on both the environment and the residents, which was fully achieved. This was carried out by first undertaking an in-depth insight into other world sustainable cities like Curitiba in Brazil which have successfully used the concept and applied the principles of sustainable community design and development as detailed in chapter two to create sustainable cities. It was observed that these cities are liveable and thriving, beautiful, environmentally friendly and most of all; a pride to their inhabitants and various countries they are situated in. Also, through field survey, interviews and cross-tabulation analysis, the researcher was able to identify the benefits of a sustainable city to the Nigeria's Federal Capital through sustainable communities' design and development.

Presently in the FCT, much attention is paid to implementation of Abuja Master Plan that was produced decades ago. However, little attention is paid to dynamism in the field of physical environment development in general and the application of the innovations inherent to revise the Master Plan in order for it to adapt to the principles of sustainable community design and development; which is more viable approach to development. The results from the study shows that the concept of sustainable community design and development has huge potentials, especially with the current structure of Abuja which constitutes distinctly

delineated six developmental communities (the six Area Councils). They include; Abuja Municipal Area Council, Abaji Area Council, Kuje Area Council, Bwari Area Council, Gwagwalada Area Council and Kwali Area Council. Furthermore, the study has shown that if developmental activities are designed at the communities' levels through the engagement of all critical stakeholders within such communities in Abuja, then Abuja sustainable development will be robustly boosted. Thus when sustainable community design and management approach is effectively implemented, it will definitely lead to a thriving, liveable and environmentally friendly FCT which will certainly become a place of pride to all Nigerians.

Thirdly, another objective the researcher sought to achieve was to investigate the current level of application of sustainable community design strategies in the development of the FCT by built environment professionals practicing in the territory. Again this was achieved in the literature review and context chapters of the research which critically evaluated sustainable designed Communities by built environment professionals. Also, the postulations by various commentators in many literatures reviewed showed the roles of built environment professionals and practitioners in the successful design of sustainable communities across the world by using the success story of Curitiba in Brazil as a case of reference. Furthermore, investigations were carried out through interview of built environment professionals and practitioners in the FCT on their application of the principles of sustainable design and development strategy in the moulding and remoulding of physical infrastructures within the FCT. Instructively, investigations revealed that several sustainability considerations seems to drive the various strategies applied when designing and developing the FCT environment using Patterns of Settlement Development as the prominent driver. These points to the fact that Abuja appears to be a planned city due to the availability of a detailed Master Plan, unfortunately, the poor adherence to such Master Plan has given it a negative stereotype of a city which does not follow sustainable design principles. Sequel to the above, it is imperative to mention that sustainable design and development cannot thrive without the understanding of the concept and principles by the practitioners. Thus, Abuja cannot develop, on a sustainable scale, without the critical stakeholders fully embracing the concept of designing of the FCT into a city of Sustainable Communities.

The researcher focused on achieving the fourth objective through the examination of the various existing guidelines and evaluating their appropriateness within the current polices on

sustainable design, development and administration of Abuja Communities. This followed the review of key literatures in chapters two and three which revealed that good and sustainable policies pave way for appropriate sustainable designs and implementation of master plans. Surprisingly, what emerged from the field work and the various interviews conducted amongst built environment professionals within the FCT suggested that, the application of the principles and concept of sustainable community is overly dependent on the government reviews of existing guidelines and policies on Abuja Master Plan. This was examined by gaining considerable insight from many cities that have successfully derived and applied appropriate policies and therefore developed sustainable cities. Also, through field survey, interviews data analysis and the cross-tabulation of variables, the benefits for the achievement of sustainable community design and development were also clearly stated.

The need to design and recommend a conceptual framework through which Abuja FCT can develop sustainably into a sustainable city by deploying the concept and principles of sustainable community design and development constituted the fifth objectives of this research. Interestingly, this objective was achieved through the information and data gathered from the results of the interviews conducted amongst built environment professionals including the field survey which identified the numerous constraints and shortfalls in achieving sustainable community design and development within the Area Councils in the FCT. This has giving rise to the conceptual framework the researcher has produced in chapter seven of this study that focuses on guiding professional stakeholders on how best to achieve sustainable communities' design and developments in Abuja FCT of Nigeria.

Therefore, the study justified that all five research objectives have been fully realized in relation to the thesis as they collectively provided a guide for the accomplishment of the stated research aim. The main motive for developing such a conceptual framework is based on the fact that a rational, logical and decisive procedure will influence the achievement of sustainable development of the Federal Capital City of Abuja. This can only be achieved through the application of sustainable communities' design and development strategy across all the various communities (Area Councils) that constitute the Federal Capital Territory, Abuja.

## 8.2 Outcome of Research

The research has shown that there is a relationship between sustainable community design and sustainable development. It has also revealed that sustainable development will take place in Abuja if the Federal Government, through the FCT administration, Area Councils, and other critical stakeholders in Abuja FCT are compelled to adhere tacitly to the principles of sustainable community design and development. In particular, the study has shown that while all stakeholders have a role to play, the Area Councils hold the key to developing Abuja into a 21st century City of sustainable communities.

In other words, the study finds that sustainable community design and development is feasible in Abuja FCT due to its administrative structures as well as the geographical delineation as entailed in Abuja Master Plan. Consequently, these communities (Area Councils) will serve as tools for developing Abuja FCT into a 21st Century liveable city of sustainable communities. Also the study revealed the various setbacks and challenges inherent in the attempt to sustainably implement the Abuja Master Plan as such suggests a conceptual framework that would guide stakeholders to deliver on sustainable communities' designs and development.

It also identified with the Six Area Councils serving as Communities to be sustainably designed and developed, so that in the end Abuja, FCT will eventually develop sustainably into a World Class City it was master planned to be. The research further revealed that a bottom-up approach as against the current top-bottom approach to the development and management of the federal capital city, would be the best strategy to developing Abuja FCT into a city of sustainable communities which in turn will lead to the creation of a sustainably liveable city. Interestingly, the outcome of the research also anchored on the need to proactively engage the built environment practitioners within the FCT on the issues of sustainable community designs and development strategies including other issues driving them in the implementation of Abuja Master Plan. This was vividly captured during the interviews with the built environment professionals practicing in Abuja, as revealed in the analysis of data in chapter six.

The study further emphasized the importance of out sourcing of development control and management while policies formulation remained in the purview of government bureaucracy. This will bring professionalism to bear on the Abuja built environment practitioners. Finally, the outcome also emphasized the need to create awareness for sustainable community design

and developments as well as the need to implement the Abuja Master Plan based on established principles and concepts of sustainable community design and development.

***Finally, this study has answered the fundamental questions of whether Abuja can, and how it can develop into a 21st Century City of Sustainable Communities***. It is expected that the conceptual framework will become a reference manual to both urban decision makers, built environment professionals, and other stakeholders in planning the development of Abuja Capital Territory in order for it to transform into a 21st Century City of Sustainable Communities.

## 8.3 Policy Recommendations.

Following the incontrovertible results and data gathered from the study, the researcher has outlined a number of recommendations that shows possible elements that could be used to initiate future public policies as they concern sustainable development in Abuja.

The potential policy recommendations include;

- The urgent need for a thorough understanding of the Abuja Master Plan in its original form, and revise the plan to the concept and principles of sustainable community development. This will require regular revisiting and revising of on Abuja's development into a 21st Century of Sustainable Communities.
- Need to revisit the implementation strategy of the Abuja Master Plan as entrenched in the relevant Act establishing FCT and FCDA. Relevant authorities in the Area councils should ensure every aspect of the Abuja Master Plan is consistently implemented.
- The need to harmonize the roles of all agencies responsible for the implementation of Abuja Master Plan. All critical stakeholders including civil society groups involved in environmental issues should be engaged into the policy formulation, planning, implementation and development of Abuja into a 21st City of sustainable community development.
- That capacity building should be vigorously pursued in the built environment professions and amongst practitioners. Built environment professionals and personnel working across the Area councils should be adequately trained and encourage to undertake up skilling of their technical and professional know how.

- The culture of regular town-hall meetings at community and council levels should be encouraged. The issue of an elaborate all-inclusive meeting amongst all stakeholders is key to achieving sustainable development of sustainable communities within Abuja FCT.
- Outsourcing of design and development to technical stakeholders to partner in the sustainable development of Abuja should be encouraged. Assessments at critical stages of the design process including, particularly site inspections should be outsourced, were necessary, to accredited professionals with FCDA oversight.
- Encouraging the concept of sustainable community design and development by demanding to see the level of consultation with end users and other relevant stakeholders before planning permissions are granted.
- That the Six Area Councils should form the nuclei of the Federal Capital territory designs and developmental efforts in Abuja, and this entails deepening the knowledge of Federal Capital Territory in the concepts and principles of sustainable community development through regular Continuing Professional Development (CPD).

## 8.4 Contribution to Knowledge.

Apparently, many findings from this research have been able to make several contributions to existing knowledge on sustainability and development of sustainable communities. Principal amongst these is the concept and principles of sustainable community design for Abuja the Federal Capital of Nigeria. This is based on the comprehensive literatures reviewed and the various stakeholders' experience in the course of implementing the Abuja Master Plan. The conceptual framework derived from the study provides essential guidelines for formulating appropriate policy to develop Abuja Federal Capital Territory of Nigeria into a 21st Century City of sustainable communities.

Academically, it has revealed the fundamental role sustainably designed communities would play in the development of Abuja and therefore contributing to the realization of sustainable 21st Century Capital City in Nigeria. This thesis also contributes to the fact that the six Area Councils are possible communities to be sustainably designed to achieve sustainable development in the FCT.

This study also offered an insight into the definition of sustainability, sustainable development and sustainable community design; which are a major contribution to knowledge.

Furthermore, findings from this study have also presented valuable understanding of Abuja and its developmental challenges so far; and therefore will impact positively on available knowledge, both practically and academically.

Finally, it has become clearer that the challenges of sustainably developing the Federal Capital Territory as identified in this research serves as a pivotal information in addressing issues militating against sustainable development of the city. As such, it has contributed to academic knowledge on FCDA, MFCT and the Nigerian government's approach to sustainability in general.

## 8.5 Limitations of Research.

Most researchers engage in their studies with the view to resolve a particular social problem and in the process provide a seemingly perfect solution to that problem. Thus researchers, expectedly, spend an extended amount of time reviewing literatures and carrying out surveys and experiments, were necessary, and engage in the analysis and accurate presentation of results and data when documenting findings. However, producing a perfect piece of research thesis is a difficult claim to make. Hence, like with all research studies, this one is not an exception and has a number of limitations, but essentially, the researcher strived to avoid most of them and work around others, given the project choice made.

Developing a conceptual framework can involve numerously complex processes, although it depends on the number of variables incorporated in the research work and the output required. The final framework presented in this research has the following limitation:

- It focused on Abuja, the New Federal Capital of Nigeria that is being developed based on an existing Master Plan. However, the framework can further be re-modelled to be applicable to other states of Nigeria and indeed other cities of the world.
- The conceptual framework used is based on the Six Area Councils as the proposed communities to be sustainably designed to serve as a catalyst for sustainably developing Abuja into a 21$^{st}$ Century City. This may not be absolutely applicable to the satellite-towns development policy of the current Master Plan development

strategy. This is due to their direct administrative dependency on the FCDA at the centre and other inherent geographical and topographical uniqueness of other areas outside Abuja.

## 8.6 Lessons Learnt from the Study.

Having carried out this research and made significant contributions to knowledge as stated above, the researcher has also learnt several lessons in the course of carrying out this research. Some these are;

- The researcher has developed skills in the use of the SPSS and gained tremendous improvement in typing speed, which helped in the output of this thesis. Also, the research has taught the investigator the skills required to carry out cross tabulation of variables in fieldwork which have brought about great revelation about the research question.
- Furthermore, during the interview stage, the researcher has learnt how to conduct interviews with professionals in the built environment professions within Abuja which has created the opportunity to meet with the major players in the design, development and management of FCT Communities.
- The fieldwork accorded the researcher an opportunity to visit all the Six Area Councils of the FCT which would not have ordinarily been the case despite being resident in the FCT for almost three decades.

## 8.7 Recommendation for Further Research.

Direction for further research, naturally flow from the limitation of the study and are suggested as follow:

- The conceptual framework derived from this research should be texted from its effectiveness and its applicability in the satellite towns including other Nigeria Communities and Cities.
- The adaptability of the conceptual framework in the implementation of the Abuja Master Plan.
- The possibility of sustainable community design and development of satellite towns in FCT.

## 8.8 Final Comment.

Clearly, this research has been able to further develop the skills and technical expertise of the researcher underpinned by a greatly enriched and crystallised academic sources as well as personal perspective. Therefore, the researcher is willing and able to share and deploy these new skills and expertise, at any capacity called upon to assist with the evaluation and implementation of the conceptual framework developed from this research. It is of paramount importance to note that one principal reason for undertaking this research topic was to prevent Abuja Federal Capital Territory of Nigeria evolving and developing with all the problems encountered in Lagos, the previous Capital City that was presented in Chapter 3. In view of this, the study has provided a detailed insight, based on empirical evidences, on how best professionals and relevant authorities could close ranks and work together to achieve the sustainable development of the Abuja FCT into a 21st century City of sustainable communities.

In the process, a new conceptual framework was developed and presented in Chapter 7, which if adopted by public policy makers, would strengthen and certainly enhance the implementation of the original Abuja Master Plan and beyond that will transform Abuja into a modern 21st Century City of sustainable communities. Thus, it is imperative to abide by the sustainable community development concept and principles in the spirits Agenda 21 that every individual, groups or organisations, and institutions have participatory roles to play in achieving sustainable community development (UNCED, 1997).

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# APPENDIX

# Appendix i

# General Questionnaire


## Questionnaire on Sustainable Communities

Developing World Built & Natural Environment Research Unit
Leicester School of Architecture
De Montfort University
Leicester, LE1 9BH
England
ramatualiyu@yahoo.com

Research Information

I'm undertaking a PhD programme at De Montfort University, researching into Sustainable Communities' Development with a specific focus on the Scope for Designing Abuja Federal Capital Territory of Nigeria into a 21st Century Functional and Resilient City of Sustainable Communities. In this regard, a series of statistical surveys – questionnaires, interviews, measurements, and observations are necessary to enable me access and collect primary data for use in validating the theoretical propositions advanced in the course of this research.

The information obtained would form part of a written thesis that will be submitted to De Montfort University in partial fulfilment of the requirements for a PhD, which will be kept in library and accessible to the public.

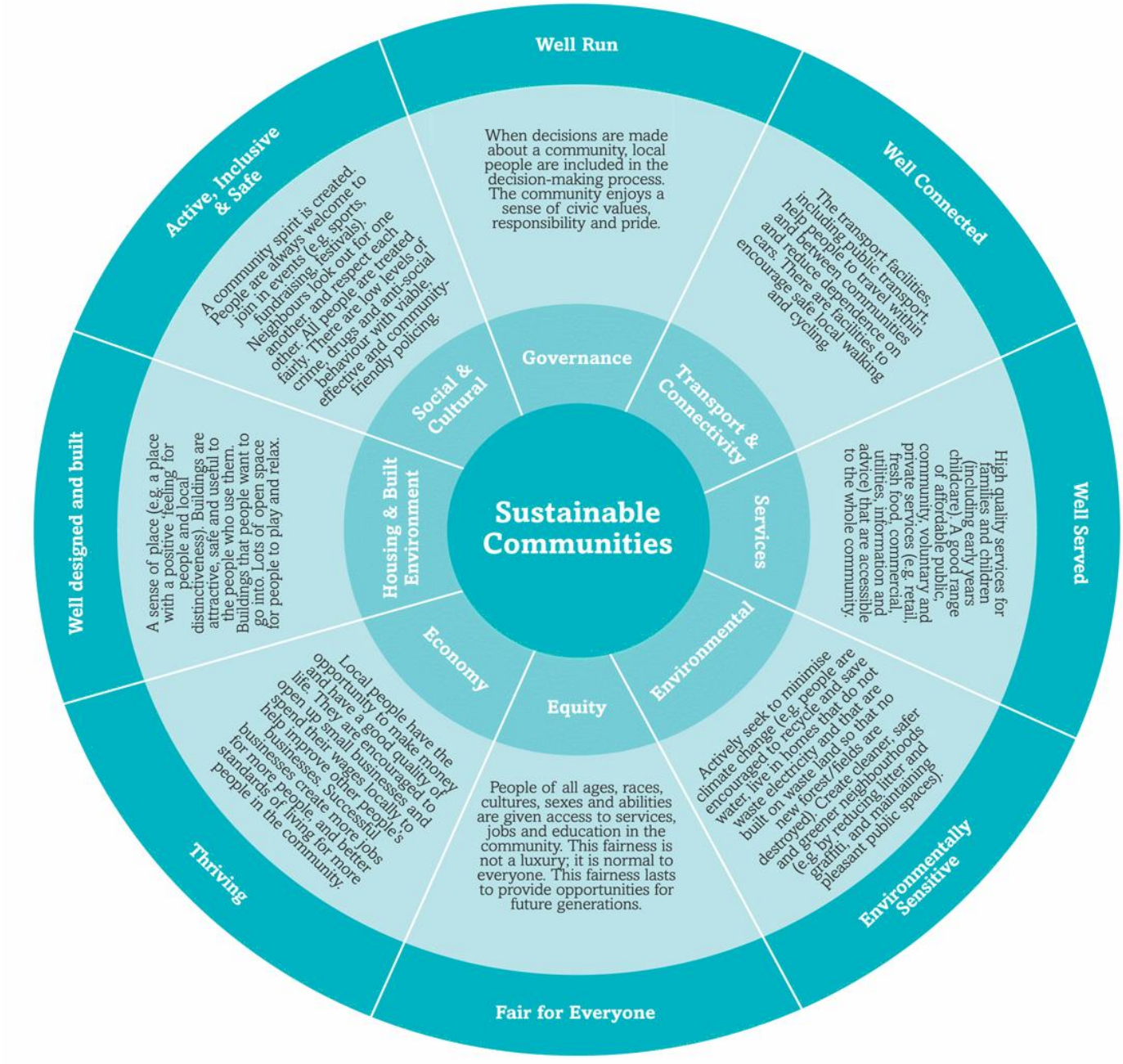
You participation is entirely voluntary, and can withdraw from participation at any time, even two weeks after your completion of the surveys without having to provide reasons. It is important that all questions are answered and instructions relating to each question are followed. Please use my contact details above to reach me for further clarifications at any time, should this be necessary.

I guarantee all participants anonymity, the survey instruments are designed so that it is impossible to trace information back to participants. All data gathered for this research will be shredded at the end of my study.

I remain grateful to you for agreeing to participate, without your cooperation, this study could not have been completed.

Ramatu Aliyu
P10460437

**ASPECTS OF SUSTAINABLE COMMUNITIES**




**Source:** ASC (2006) *Making Places: creating sustainable communities. A teacher's guide to sustainable communities*, Leeds: Academy for Sustainable Communities

- **Equity**
- **Economy**
- **Housing & Built Environment**
- **Social Cultural**
- **Governance**
- **Transport & Connectivity**
- **Services**
- **Environmental**

## A. Socio-economic characteristics

### 1. Gender:

**a.** Female **b.** Male

### 2. Age:

**a.** 18 - 29 **b.** 30 – 39 **c.** 40 – 49 **d.** 50 – 59 **e.** 60 >

### 3. Education:

**a.** Elementary/Secondary **b.** Tertiary education **c.** Graduate **d.** Uneducated

### 4. Employment:

**a.** Public sector **b.** Private sector

### 5. Income levels:

**a.** N10,000 – N20,000 **b.** N21,000 – N50,000 **c.** N51,000 – N100,000

**d.** N101,000 –N200,000 **e.** N202,000 – N500,000 **f.** N501,000 >

### 6. Distance travelled to work

**a.** < 1mile – 2miles **b.** >2 – 3miles **c.** >3 – 4miles **d.** >4 – 5miles

**e.** > 5 – 10miles **f.** > 10 – 15miles **g.** >15 – 20 miles **h.** >20 – 30miles

### 7. Percentage of income spent on transportation to & from work each month

**a.** 2 – 5% **b.** 6 – 10% **c.** 11 – 15% **d.** 16 – 20% **e.** 21 – 25%

**f.** 26 – 30% **g.** 31 – 40% **h.** 40% >

## B. What is a sustainable community?

**Q1:** Identify six aspects of a sustainable community that are most important to you. Why?

| Aspects of a Sustainable Community | Reason for Personal Importance |
|---|---|
| 1. | |
| 2. | |
| 3. | |
| 4. | |
| 5. | |
| 6. | |

**Q2:** How did you rate your community on these six aspects? Explain your rating by identifying the relative strengths and limitations of your community on each of these factors.

| Aspects | Rating | Strengths | Limitations |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |

**Q3:** Identify the policies and actions being undertaken by your local government to address these six aspects.

| Aspects of a Sustainable Community | Relevant Local Government Actions |
|---|---|
| 1. | |

| | |
|---|---|
| 2. | |
| 3. | |
| 4. | |
| 5. | |
| 6. | |

**Q4. Key Features of a Sustainable City: Please tick Yes or No accordingly**

| | **Features of a Sustainable Community Development** | **Yes** | **No** |
|---|---|---|---|
| a. | Resources and services in the city are accessible to all? | | |
| b. | Is public transport available? | | |
| c. | If public transport is available, is it regular, safe, and reliable? | | |
| d. | Do people walk, cycle, or use public transport than cars? | | |
| e. | Is walking and cycling safe? | | |
| f. | Are there pavements and bicycle routes | | |
| g. | Are recreational areas of open space available? | | |
| h. | Are renewable energy resources (solar, wind, etc) used in place of non-renewable (petrol, kerosene, gas, generators etc) resources | | |
| i. | Is wastes recycling actively encouraged and widely practiced by households and businesses? | | |
| j. | Are affordable and autonomous (functions independently of central services) homes available and accessible? | | |

| | | | |
|---|---|---|---|
| k. | Are cultural and social amenities available and accessible to all | | |
| l. | Is there a strong sense of community identity and belonging | | |
| m. | Is there a community forum | | |

## C. Local solutions to Sustainable Community Development problems

### Abuja Federal Capital Territory (FTC)

**Q5:** If you were FCT Minister, what would you encourage Local Governments to do about conditions in satellite towns and the squatter settlements?

**Q6:** How can running water be supplied even though you do not have money for standard water mains and the people do not have enough money to pay taxes or buy water?

**Q7:** What would you do to improve health conditions in these settlements? Who might you turn to for help in these endeavours, locally, nationally, globally?

**Q8:** Use the table below in *Part Two: Solutions for Local Sustainability* for this question.

### Abaji Area Council

**Q9:** If you were the Chairman of Abaji Area Council, what practical steps would you take to address the housing problems in the territory?

**Q10:** As Chairman of Abaji Area Council, what do you think the role of residents should be in solving their problems?

**Q11:** Besides the residents themselves, who else (*people or organisations*) might need to be involved in these efforts? What would they do?

**Q12:** What obstacles might you encounter? How would you deal with them?

| **Obstacles** | **Solutions** |
|---|---|
| 1. | |
| 2. | |
| 3. | |

**Q13:** If you lived in Abaji Area Council and were concerned about the Local plan, what would be the first thing you would do to be heard?

**Q14:** If that did not work, what else would you try?

**Q15:** As an Abaji resident, what would you like to see your community become? What sorts of residential and commercial buildings, parks and streets would provide an environment that is enjoyable to live in?

**Q16:** As an Abaji resident, what actions would you suggest to deal with the garbage problems in your neighbourhood?

**Q17:** What would you propose to be done with the garbage dump if your actions are adopted?

**Q18:** What type of use of that land would most enhance and help your community?

**Q19:** What processes should your community use to decide what to do with the land?

**Q20:** Use the table below*: Solutions for Local Sustainability* for this question.

**D - Solutions for Local Sustainability**

Identify the principles of sustainable community development that were followed in the planning of Abaji, place an X in the appropriate boxes.

| Principles of a Sustainable Community | Mark X |
|---|---|
| Natural Environment | |
| Population | |
| Water Consumption | |
| Food | |
| Production | |
| Use of Raw Materials | |
| Transportation | |
| Housing | |
| Economy | |
| Social Equity and Justice | |
| Governance and Participation | |
| Education | |
| Health | |
| Spirituality | |

## E – Local Concerns

**Q21:** List five problems your are most concerned about in Abaji and assess their current status

| Nos. | Problems of most concern | Status | |
|---|---|---|---|
| | | Mild | Acute |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

## F - Reflection

**Q22:** What can you, as an individual, do to encourage neighbourhood participation in Local Agenda 21 activities?

**Q23:** Which activities would you consider most useful for one of your neighbourhoods to engage, and why?

**Q24:** Does Abaji have an inventory of its human, natural, and economic capitals or resources. Does the community know their finite quality or scarcity?

**Q25:** Does Abaji have any of the following facilities:

**a.** Community Centre **b.** Market/commercial centre **c.** Clinic **d.** Post Office

**e.** Police Station **f.** Primary School **g.** Secondary School **h.** Sports Hall

**i.** Children play ground

**Q26:** Identify which of these facilities are functional? Of the facilities identified, what are the problems?

**Q27:** Who owns and manage these community facilities? To what extent do neighbourhood associations, if any, participate in the management of these community facilities?

**Q28:** Are there community events? How frequent are such community events?

**G – Climate change impact on Abaji: Global environment is facing serious irreversible change caused by human activities evidenced, in many ways, by the huge ecological footprints of cities.**

**Q29:** How severely will climate change affect your country and why?

**Q30:** In what ways is Abaji experiencing the impacts of climate change?

**Q31:** Who do you think will be most affected by this impact, and why?

**Q32:** Mitigation seeks to reduce atmospheric carbon concentration while adaptation seeks to assist in lessening the effects of atmospheric carbon concentration. Which is the best strategy in your opinion, and why?

**Q33:** What options are being explored in Abaji to try to adapt to the effects of

climate change?

| |
|---|
| |

**Q34:** Categorise the following ten strategies for mitigating and adapting to climate change according to their relevance for individuals, families, communities, governments and businesses. Please tick relevant boxes for each strategy. It is possible that each strategy may be relevant to more than one group.

| **Strategies** | **individuals** | **Families** | **Communities** | **Governments** | **Businesses** |
|---|---|---|---|---|---|
| Altering lifestyle | | | | | |
| Long-term planning | | | | | |
| Innovation | | | | | |
| Population | | | | | |
| Land conservation | | | | | |
| Strong institutions | | | | | |
| Equity | | | | | |
| Economic stability | | | | | |
| Political stability | | | | | |
| Movement for change | | | | | |

# Questionnaire for Built Environment Professionals

**Questionnaire on Sustainable Communities**

Developing World Built & Natural Environment Research Unit
Leicester School of Architecture
De Montfort University
Leicester, LE1 9BH
England
ramatualiyu@yahoo.com

Research Information

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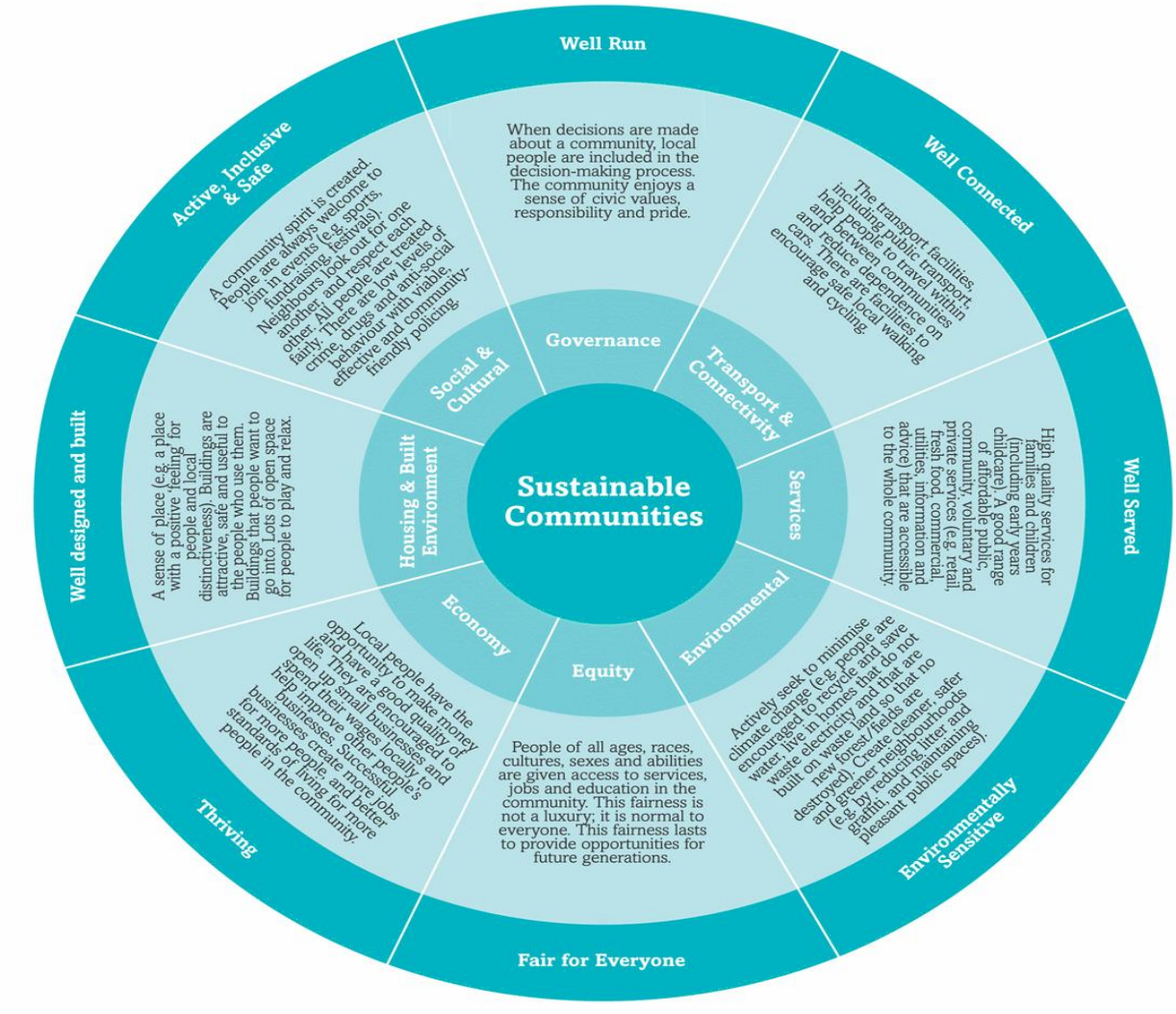
Ramatu Aliyu
P10460437

# Questionnaire for the Built Environment Professionals

## ASPECTS OF SUSTAINABLE COMMUNITIES




**Source:** ASC (2006) *Making Places: creating sustainable communities. A teacher's guide to sustainable communities*, Leeds: Academy for Sustainable Communities

**ASPECTS OF SUSTAINABLE COMMUNITIES**

- Equity
- Economy
- Housing & Built Environment

- Social Cultural
- Governance
- Transport & Connectivity
- Services
- Environmental

**C. Socio-economic characteristics**

**3. Gender:**

**b.** Female **b.** Male

**4. Age:**

**b.** 18 - 29 **b.** 30 – 39 **c.** 40 – 49 **d.** 50 – 59 **e.** 60 >

**3. Education:**

**a.** HND **b.** BSc (Hons) **c.** MSc/MA **d.** PhD

**4. Do you belong to any of the built environment professions, and which one?**

**a.** NIA/ARCON **b.** NSE/COREN **c.** NITP/TOPREC **d.** NIOB/CORBON
**e.** NIQS **f.** NISEV **g.** NIS

**5. Employment:**

**a.** Public sector **b.** Private sector

**6. Income levels:**

**a.** N10,000 – N20,000 **b.** N21,000 – N50,000 **c.** N51,000 – N100,000

**d.** N101,000 –N200,000 **e.** N202,000 – N500,000 **f.** N501,000 >

| Suggested Strategies | YES | NO | Consideration Issues | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Pattern of Settlement Development | Ecosystem | Materials Conservation | Water Conservation | Energy Conservation | Healthy Human | Communal Culture | Ecological Activities |
| **Programming** | | | | | | | | | | |
| *Programme and designing with respect to existing pattern of settlement development* | | | | | | | | | | |
| *Site selection, such as brown field sites in redevelopment areas, [1]avoiding sites with significant biodiversity* | | | | | | | | | | |
| *Site and existing local ecosystem analysis* | | | | | | | | | | |
| *Zoning and land use analysis and management* | | | | | | | | | | |
| **Planning strategies for reducing Environmental Impacts** | | | | | | | | | | |
| *Compact city: close-knit and liveable community, mixed land us, and higher density pattern* | | | | | | | | | | |
| *Re-urbanisation and re-development urban infill (Abuja and Satellite-Towns)l* | | | | | | | | | | |
| *Small-scale self-sufficient community (Abuja and Satellite-Towns)* | | | | | | | | | | |
| **Planning to Conserve Natural Environment** | | | | | | | | | | |
| *Preservation area for wildlife (Sub-urban and Rural areas)* | | | | | | | | | | |
| *Reducing site impact/ability to biodegrade* | | | | | | | | | | |
| *Conserving watersheds and wetlands* | | | | | | | | | | |
| *Conserving rural populations, productive land (Abuja and Satellite-Towns)* | | | | | | | | | | |
| *Conserving rural populations, productive land (Abuja and Satellite-Towns), forestry* | | | | | | | | | | |
| *Include social and environmental impact in feasibility study* | | | | | | | | | | |
| *User participation in community planning process (community planning controls and community building programmes)* | | | | | | | | | | |
| **Community and Site Design** | | | | | | | | | | |
| *Mixed use development* | | | | | | | | | | |
| *Mixed households* | | | | | | | | | | |
| *Liveable community* | | | | | | | | | | |
| *Historic or community landmark preservation, natural conservation and tourism* | | | | | | | | | | |
| *Encouraging local culture, such as spirituality, art and craft* | | | | | | | | | | |
| *Encouraging local business and services* | | | | | | | | | | |
| *Design with respect to ecological features, such as topographical contours and landscape feature* | | | | | | | | | | |
| *Preserving and creating active green space[2] (such as parks, green ways, and urban agriculture (U)* | | | | | | | | | | |
| *Reducing private vehicle use* | | | | | | | | | | |
| | | | | | | | | | | |

[1] The strategy can be applied in particular places or situations

[2] This is where green space might be for storm water management, local food growing, for sport, or a combination of any of the above.

| Suggested Strategies | YES | NO | Consideration Issues | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Pattern of Settlement | Ecosystem | Materials | Water Conservation | Energy | Healthy Human | Communal Culture | Ecological Activities |
| **Community and Site Design Continue** | | | | | | | | | | |
| **Encouraging pedestrians, cycling, and public transport:-** | | | | | | | | | | |
| ***Providing pedestrian area*** | | | | | | | | | | |
| ***Providing cycling facilities*** | | | | | | | | | | |
| ***Providing convenient access to public spaces and facilities such as safe and pleasant paths and green corridors*** | | | | | | | | | | |
| **Planting vegetation** | | | | | | | | | | |
| ***Planting native or local vegetation*** | | | | | | | | | | |
| ***Planting vegetation to create natural shelter and shade*** | | | | | | | | | | |
| ***Maintenance of natural vegetation to maintain capacity of hydrological cycle and promote habitats*** | | | | | | | | | | |
| ***Protection and maintenance of surface and ground water quality and quantity*** | | | | | | | | | | |
| ***Energy conscious urban planning and site planning, such as avoiding overshadowing, solar access to street and public places, and wind blocks*** | | | | | | | | | | |
| ***Local-food production, such as household food growing , street farming, city farming, and permaculture ( Satellite-Towns)*** | | | | | | | | | | |
| ***Encouraging community member involvement in decision-making and design of their environment*** | | | | | | | | | | |
| ***Technical facilitation in community building programme*** | | | | | | | | | | |
| **Building Configuration and Design Configuration** | | | | | | | | | | |
| ***Holistic design approach and collaboration between professions*** | | | | | | | | | | |
| ***Design for minimising construction footprint:-*** | | | | | | | | | | |
| ***Planning compact, higher average densities (Abuja and Satellite Towns)*** | | | | | | | | | | |
| ***Vertical city (Abuja), and multi-storey houses (Abuja and Satellite Towns)*** | | | | | | | | | | |
| ***Sharing common spaces, facilities and external spaces*** | | | | | | | | | | |
| ***Renovation – adaptation of existing building to new uses*** | | | | | | | | | | |
| ***Up-grading and design for adaptability*** | | | | | | | | | | |
| ***Careful design of building configuration, for instance, orientation, building size, and forms*** | | | | | | | | | | |
| ***Using natural lighting and natural ventilation whenever possible*** | | | | | | | | | | |
| ***Passive heating and cooling design*** | | | | | | | | | | |
| ***Designing building components that respond to climate such as sun shading, added insulation, double skin external walls, etc*** | | | | | | | | | | |
| ***Design to minimise waste, e.g using modules of sheet materials and eliminating unnecessary finishes and other products*** | | | | | | | | | | |
| ***Providing space for food production*** | | | | | | | | | | |
| ***Providing space for energy generators on sites or buildings*** | | | | | | | | | | |

| Suggested Strategies | YES | NO | Consideration Issues | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Pattern of Settlement Development | Ecosystem | Materials Conservation | Water Conservation | Energy Conservation | Healthy Human | Communal Culture | Ecological Activities |
| **Building configuration and Design Consideration Continue** | | | | | | | | | | |
| **Design for healthy environments:-** | | | | | | | | | | |
| ***Promoting good indoor air quality*** | | | | | | | | | | |
| ***Design for thermal, acoustic, and visual comfort*** | | | | | | | | | | |
| ***Providing connection between interior and exterior*** | | | | | | | | | | |
| ***Reducing the impact of electromagnetic fields (EMFs)*** | | | | | | | | | | |
| **Design for physical comfort and safety** | | | | | | | | | | |
| ***Design with ergonomic concern and avoidance of overcrowding*** | | | | | | | | | | |
| ***Accommodating people with different physical abilities, such as babies, elderly and handicapped people*** | | | | | | | | | | |
| ***Providing a safe environment, accessibility, and fire exits*** | | | | | | | | | | |
| ***Avoid giving opportunities for crime*** | | | | | | | | | | |
| ***Design for maximising employment opportunities*** | | | | | | | | | | |
| ***Design for maintenance and longevity*** | | | | | | | | | | |
| ***Learn from vernacular pattern*** | | | | | | | | | | |
| **Enhance Public Image:-** | | | | | | | | | | |
| ***Providing social space, such as green open spaces, meeting spaces and playground*** | | | | | | | | | | |
| ***Local characteristics, for example, regionalism, vernacular architecture, and local materials and crafts for built environment elements*** | | | | | | | | | | |
| ***Using local materials and crafts for built environment elements*** | | | | | | | | | | |
| **Encouraging future user involvement in decision-making design** | | | | | | | | | | |
| **Building Component Selection** | | | | | | | | | | |
| ***Choosing materials and products with low embodied energy*** | | | | | | | | | | |
| ***Choosing local materials and products to reduce transport energy and attendant Co2 emissions*** | | | | | | | | | | |
| ***Choosing components that producer less greenhouse gases in extraction and manufacture*** | | | | | | | | | | |
| ***Choosing components that produce less pollution in extraction, manufacture, and use*** | | | | | | | | | | |
| ***Using recycled materials or recyclable materials*** | | | | | | | | | | |
| ***Using non-toxic materials (natural and bio-degradable material)*** | | | | | | | | | | |
| ***Appropriate provision for possible future services*** | | | | | | | | | | |
| ***Rain water collection*** | | | | | | | | | | |
| ***Reuse water on site*** | | | | | | | | | | |
| ***Grey water management or central water waste management*** | | | | | | | | | | |
| ***Water saver appliances, such as low-flow showerheads and low flush toilets*** | | | | | | | | | | |
| ***Using non-polluting energy source*** | | | | | | | | | | |
| ***Central hydroelectricity or other sources of renewable energy*** | | | | | | | | | | |

| Suggested Strategies | YES | NO | Consideration Issues | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Pattern of Settlement Development | Ecosystem | Materials Conservation | Water Conservation | Energy Conservation | Healthy Human | Communal Culture | Ecological Activities |
| **Building Component Selection Continue** | | | | | | | | | | |
| *On-site energy production, such as solar energy and biomass* | | | | | | | | | | |
| *Using energy generators, such as solar panels, as building elements* | | | | | | | | | | |
| *Use of energy efficient systems and appliances* | | | | | | | | | | |
| **Construction** | | | | | | | | | | |
| *Selection of modes of construction that creates less impact on the environment* | | | | | | | | | | |
| *Waste material management* | | | | | | | | | | |
| *Avoiding potential pollution water and land whenever possible and use environmentally friendly chemical and cleaning agent* | | | | | | | | | | |
| *Careful construction supervision to prevent pollution and effects on the community during construction* | | | | | | | | | | |
| *Self-builders or local labour* | | | | | | | | | | |

# Appendix ii

**Table: 51. Cross-tabulation of Income and Distance to Work**

| | 0 | <1 mile-2miles | >2-3miles | >3-4miles | >4-5miles | >5-10miles | >10-15miles | >15-20miles | >20-30miles | 11 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 100.00% |
| 10,000-20,000 | 1 | 8 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 11 |
| | 9.10% | 72.70% | 0.00% | 9.10% | 0.00% | 9.10% | 0.00% | 0.00% | 0.00% | 0.00% | 100.00% |
| 21,000-50,000 | 0 | 4 | 9 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 17 |
| | 0.00% | 23.50% | 52.90% | 11.80% | 11.80% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 100.00% |
| 51,000-100,000 | 7 | 8 | 15 | 9 | 10 | 6 | 1 | 2 | 6 | 0 | 64 |
| | 10.90% | 12.50% | 23.40% | 14.10% | 15.60% | 9.40% | 1.60% | 3.10% | 9.40% | 0.00% | 100.00% |
| 101,000-200,000 | 1 | 3 | 2 | 0 | 5 | 4 | 4 | 5 | 3 | 1 | 28 |
| | 3.60% | 10.70% | 7.10% | 0.00% | 17.90% | 14.30% | 14.30% | 17.90% | 10.70% | 3.60% | 100.00% |
| 202,000-50,0000 | 1 | 0 | 2 | 3 | 1 | 2 | 0 | 3 | 2 | 0 | 14 |
| | 7.10% | 0.00% | 14.30% | 21.40% | 7.10% | 14.30% | 0.00% | 21.40% | 14.30% | 0.00% | 100.00% |
| 501,000 and above | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 4 |
| | 0.00% | 0.00% | 25.00% | 0.00% | 25.00% | 0.00% | 25.00% | 0.00% | 25.00% | 0.00% | 100.00% |
| | 10 | 23 | 30 | 15 | 19 | 13 | 6 | 10 | 12 | 1 | 139 |
| | 7.20% | 16.50% | 21.60% | 10.80% | 13.70% | 9.40% | 4.30% | 7.20% | 8.60% | 0.70% | 100.00% |

| | Value | df | p.value |
|---|---|---|---|
| Pearson Chi-Square | 91.285 | 54 | .001 |
| | | | |
| | | | |
| | | | |

**Table: 5.2 Solutions to Local Sustainable Community Development Problems**

| Aspect of Sustainable Community | Followed | Not followed | Total |
|---|---|---|---|
| Natural environment | 78 | 7 | 85 |
| | 91.8% | 8.2% | 100% |
| Population | 69 | 16 | 85 |
| | 81.2% | 18.8% | 100% |
| Water consumption | 55 | 30 | 85 |
| | 64.7% | 35.3% | 100% |
| Food | 70 | 15 | 85 |
| | 82.4% | 17.6% | 100% |
| Production | 52 | 33 | 85 |
| | 61.2% | 38.8% | 100% |
| Use of raw materials | 56 | 29 | 85 |
| | 65.9% | 34.1% | 100% |
| Transportation | 57 | 27 | 84 |
| | 67.9% | 32.1% | 100% |
| Housing | 66 | 19 | 85 |
| | 77.6% | 22.4% | 100% |
| Economy | 62 | 23 | 85 |
| | 72.9% | 27.1% | 100% |
| Social equity and justice | 63 | 23 | 86 |
| | 73.3% | 26.7% | 100% |
| Governance and participation | 74 | 12 | 86 |
| | 86.0% | 14.0% | 100% |
| Education | 61 | 22 | 83 |
| | 73.5 | 26.5 | 100 |
| Health | 68 | 17 | 85 |
| | 80.0 | 20.0 | 100 |
| Spirituality | 59 | 26 | 85 |
| | 69.4 | 30.6 | 100 |

**Table: 5.3 Activities Most Useful in the Neighbourhoods**

| Activities | Frequency | Percent |
|---|---|---|
| Waste management | 2 | 2.3 |
| Tree planting | 31 | 35.6 |
| Sanitation | 42 | 48.3 |
| Sport | 2 | 2.3 |
| Small business | 1 | 1.1 |
| Others | 9 | 10.3 |
| Total | 87 | 100.0 |

**Table: 5.4 State Infrastructure in FCT Area Councils**

| **Community Centre** | Frequency | Percent |
|---|---|---|
| Functional | 56 | 53.8 |
| Not functional | 48 | 46.2 |
| Total | 104 | 100.0 |
| **Market/Commercial Centre** | Frequency | Percent |
| Functional | 94 | 89.5 |
| Not functional | 11 | 10.5 |
| Total | 105 | 100.0 |
| **Clinic** | Frequency | Percent |
| Functional | 90 | 85.7 |
| Not functional | 15 | 14.3 |
| Total | 105 | 100.0 |
| **Post Office** | Frequency | Percent |
| Functional | 67 | 64.4 |
| Not functional | 37 | 35.6 |
| Total | 104 | 100.0 |
| **Police Station** | Frequency | Percent |
| Functional | 97 | 91.5 |
| Not functional | 9 | 8.5 |
| Total | 106 | 100.0 |
| **Primary School** | Frequency | Percent |
| Functional | 98 | 94.2 |
| Not functional | 6 | 5.8 |
| Total | 104 | 100.0 |
| **Secondary School** | Frequency | Percent |
| Functional | 94 | 90.4 |
| Not functional | 10 | 9.6 |
| Total | 104 | 100.0 |
| **Sports Hall** | **Frequency** | **Percent** |
| Functional | 50 | 48.5 |
| Not functional | 53 | 51.5 |

| | | |
|---|---|---|
| Total | 103 | 100.0 |
| **Children Play Ground** | Frequency | Valid Percent |
| Functional | 43 | 42.2 |
| Not functional | 59 | 57.8 |
| **Total** | **102** | **100.0** |

**Table 5.4b Key Features of Sustainable City**

| | **Key Features of Sustainable City** | **Yes** | **No** | **Total** |
|---|---|---|---|---|
| 1 | Resources and services in the city are accessible to all? | 57 (43%) | 75 (57%) | 132 (100%) |
| 2. | Is public transport available | 106 (78%) | 30 (22%) | 136 (100%) |
| 3 | If public transport is available, is it regular, safe and reliable? | 62 (46%) | 73 (54%) | 135 (100%) |
| 4 | Do people walk, cycle or use public transport than car | 77 (57%) | 59 (43%) | 136 (100%) |
| 5 | Is walking and cycling safe? | 64 (46%) | 74 (54%) | 138 (100%) |
| 6 | Are there pavements and bicycle routes? | 43 (31%) | 95 (69%) | 138 (100 |
| 7 | Are recreational areas of open space available? | 79 (58%) | 57 (42%) | 136 (100%) |
| 8 | Are renewable energy resources (solar, wind etc) used in place of non-renewable (petrol, kerosene, gas, generator etc) resources? | 36 (27%) | 100 (74%) | 136 (100%) |
| 9 | Is wastes recycling actively encouraged and widely practices by households and businesses? | 39 (29%) | 98 (72%) | 137 (100%) |
| 10 | Are affordable and autonomous (functions independently of central services) homes available and accessible? | 48 (32%) | 101 (68%) | 149 (100%) |

| | | | | |
|---|---|---|---|---|
| | | | | |
| 11 | Are cultural and social amenities available and accessible to all | 51 (38%) | 85 (63%) | 136 (100%) |
| 12 | Is there a strong sense of community identity and belonging | 76 (56%) | 60 (44%) | 136 (100%) |
| 13. | Is there a community forum | 84 (62%) | 51 (38%) | 135 (100%) |

**Table 5.7 Categories of Strategies Relevant in Identified Sectors**

| Strategies | Individuals | Families | Communities | Governments | Businesses | Total |
|---|---|---|---|---|---|---|
| Altering lifestyle | 82 | 55 | 40 | 26 | 33 | 236 |
| | 34.7 | 23.3 | 16.9 | 11.0 | 14.0 | 100.0 |
| Long-term planning | 24 | 26 | 48 | 73 | 41 | 212 |
| | 11.3 | 12.3 | 22.6 | 34.4 | 19.3 | 100.0 |
| Innovation | 47 | 25 | 36 | 70 | 57 | 235 |
| | 20.0 | 10.6 | 15.3 | 29.8 | 24.3 | 100.0 |
| Population | 32 | 49 | 50 | 52 | 19 | 202 |
| | 15.8 | 24.3 | 24.8 | 25.7 | 9.4 | 100.0 |
| Land Conservation | 12 | 20 | 60 | 74 | 23 | 189 |
| | 6.3 | 10.6 | 31.7 | 39.2 | 12.2 | 100.0 |
| Strong institution | 10 | 19 | 44 | 76 | 28 | 177 |
| | 5.6 | 10.7 | 24.9 | 42.9 | 15.8 | 100.0 |
| Equity | 18 | 28 | 46 | 71 | 39 | 202 |
| | 8.9 | 13.9 | 22.8 | 35.1 | 19.3 | 100.0 |
| Economy Stability | 22 | 18 | 34 | 75 | 58 | 207 |
| | 10.6 | 8.7 | 16.4 | 36.2 | 28.0 | 100.0 |
| Political Stability | 26 | 17 | 42 | 78 | 27 | 190 |
| | 13.7 | 8.9 | 22.1 | 41.1 | 14.2 | 100.0 |
| Movement for Change | 54 | 36 | 63 | 53 | 43 | 249 |
| | 21.7 | 14.5 | 25.3 | 21.3 | 17.3 | 100.0 |

**PUBLICATIONS**

# CHALLENGES OF CONDUCTING FIELD STUDIES IN NIGERIA: THE CASE OF THE BUILT ENVIRONMENT SECTOR.

*By*

***Ramatu Aliyu***

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*Ramatu Aliyu is an Architect and a doctoral degree student at the Developing World Built and National Environment Research Unit, Leicester School of Architecture, De-Montfort University, Leicester, LE7 9BH. Email: ramatualiyu@yahoo.com

**ABSTRACT**.

*Research works generally have their challenges and they cut across all sectors or aspects. However, the Built environment sector presents peculiar challenges to researchers seeking information and data for further research in the sector. As widely known, field research is a way of extracting that valuable data collected primarily from a defined area guided by known template and using accepted methodology. Access to quality data facilitates important discoveries, and allows possible original contributions to existing knowledge. Results from quality data analysis allow hypothesis to be verified or refuted, helping to shape the response to a research question. While access to quality data is a major challenge in the built environment sector, particularly in the developing countries, they are more acute in sub-Saharan Africa, and Nigeria is no exception. Over and above many of the obvious reasons, the relative underdevelopment of the built environment sector results in little forward and backward linkages with rest of the economy. As a consequence, more than 85 percent of inputs into construction activities are imported, affording little opportunity for research. Given this fact, built environment academics and professionals involved in research in sub-Saharan Africa should endeavour to highlight and document their experiences with data collection to guide future researchers. This paper, through a documented personal experience and critical literature review, brings to fore the challenges encountered during fieldwork to obtain relevant data to validate set hypothesis for my doctoral study in the area of sustainable communities development. It is expected that findings from this study will be useful to researchers in the built environment sector of the economy, especially in sub-Saharan Africa.*

***Keywords:*** *Built Environment, Research, Challenges, sub-Saharan Africa, Nigeria*

## Introduction

Field work is a good significant part of a good research. As widely known, field studies is a way of extracting that valuable data collected primarily from a defined area guided by known template and using accepted methodology. Access to quality data facilitates important discoveries and allow hypothesis to be verified or refuted, helping to shape the response to a research question. However, access to quality data is a major challenge in the built

environment sector, which implies the physical environment in this context, particularly in the developing countries. The challenges are more acute in Sub-Saharan Africa and Nigeria is no exception. On Over and above, the relative under development of the built environmental, sector of the economy in Nigeria such as lack of local manufacturing of components needed for the development of the physical environment especially the construction sub sector results in little synergy with the economy; leading to over dependent on importation of construction materials and resulting in little opportunity for research in the development of indigenous building materials. According to the immediate past Minister of Industry, Trade and Investment Dr. Olusegun Aganga (in 2014), Nigeria spends over N500bn ($3.3b) on importation of building materials yearly which he said may increase to $15b in the next few years. It is in view of this that as a built environment professional and a researcher in this field; I saw the need to highlight and document experiences with data collection to serve as a guide for future researchers in the sector.

**Challenges of Field Studies**

Finding an appropriate balance between the requirements of ethical research and the requirement of academic success can be challenging, particularly for novice researchers. Participants such as the respondents as well as established authority as the case may be may request that researchers withhold publication of result for a period of time so as not to undermine local initiatives. In particularly, sensitive cases, participants may request that researchers not publish the findings at all, leaving researchers in a compromised position in terms of their professional advancement. This can put doctoral researchers in a position of unexpected professional vulnerability –potentially jeopardizing the timely completion of their programs.

All these should be made visible by the graduate school in such a way that possible challenges in fieldworks be included in the generic courses designed for researchers. The tensions in this regard can further be explicitly addressed by creating easy access to research school for ease of consultation during field works surprisingly too. In many cases, research participants can become actively involved in all stages of the research due to personal or cultivated interest in the research topic. Some research participants become so involved to the extent of resources contribution, thereby leading to exerting control and undue influence in the direction of the research. This brings to fore the position that “power can be democratically shared vis-à-vis participatory involvement”. However, the extent/ modalities has been repeatedly called into question (Gilles & Alldred, Page 43).

**Major challenges that researchers generally confronts are summarized thus:-**

*Restricted access to key actors in the sector.
*Residual negativity based on poor practices and ethical abuses of past researchers.
*The cumbersome nature of government bureaucracy and protocols.
*Difficulty of working in politically charged contexts.
*Risk factor in working in war zones.

These are explained below as follows:

**Restricted Access To Key Actors**.

In a number of cases, potentially interesting participants failed may fail to return repeated calls. And in the end, the researcher would have no option other but to accept their tactical refusal to engage in dialogue on the subject matter., although Although some researchers may found find the lack of response to various queries somewhat dis-hearting, one would be more

grateful to those who did consent to respond or to engage in an interview. It is equally most fulfilling too. However, whether the lack of interest on the part of policy makers reflects logical constraints, skepticism towards the researcher interest or some other reasons remains unknown.

**Cumbersome Nature of Government Bureaucracy and Protocol**.
Foucault's interpretation of power as multidirectional, "Operating from the top down and also from the bottom up" (Dreyfus and Rainao, 1983 p.185), is useful here. Certainly, a multi-directional understanding of power does not preclude the possibility of domination or oppression (in this case, in the context of potentially unequal researcher – participate relations) but rather, acknowledges the potential for interviewers to resist domination. Perhaps, the most obvious – and relatively low risk-way that interviewers (both marginalized and elite) resist domination is through non-participation; or would behoove novice researchers to keep at the fore that participants access is a privilege and not an entitlement and to adjust expectations – and assumptions – regarding participation accordingly when planning research process. This would greatly enhance the researcher's delivery capacity in a timely and effective mannerly; with minimum stress possible.

**Residual Negativity Based On Poor Practices and Ethical Abuses of Past Researchers.**
Interview access can also be denied for reasons completely unrelated to the project (and researcher) in question. Poor practices and ethical abuses of past researchers can legitimately result in limited access to respondents or interviewers. Misconduct by researchers can harm a participant community and spoil future research opportunities.

**Field Work During Politically Charged Period:-**
Generally, conducting field work during electioneering year is particularly difficult within a politically charged context. Skeptism creeps in and respondents / interviewers become much more reluctant to respond and much more restrictive with the level of information given. Respondents in some instances relate the researcher with electioneering campaign as well as become hostile. In some instances they relate the researcher with bad governance – believing you are a government agent or worker.

**Risk Factor – Field Working In War Zones:-**
Conducting research field work in war zones can be extraordinary challenging especially if it is deemed a war zone, conflict ridden and unsafe by international media. This is in the context of not being able to perform normal actions performed daily at a time of peace. These otherwise simple daily actions become challenged by chaos of warfare. Activities such as eating, drinking, finding shelter and protecting oneself from harm can often become recurring struggles, necessary for survival. As such, the usual challenges of empirical research are intensified and are accompanied by various new contests, many of which interconnect the broad categories of methodology, practice and ethics. Some of these new challenges such as the difficulty in receiving funding, the importance of the researchers' ethnicity or nationality in conjunction with the wider potential danger of transporting research notes are in essence simple functional dilemmas that merit only a passing reference.

There are however, certain new challenges which deserves particular attention as they developed alongside other research contests, amplifying methodology and ethical qualms. These challenges concern both access to information in the war zone, as the rapidly changing nature of the conflict produces new practical and ethical contest and the character of the

researcher, the conflict presenting them with new challenges during which they must rely upon their own judgment (Hellbart, Hellman-Rajanayagam and Koff 2010: 374/380). Summarily, therefore, the difficulty of this imperative element of field work process is heightened in war zones for many reasons. Firstly, the scientific side to academic field work is near devastated as solid accountable statistical data is almost impossible to accumulate. Methodological norms proficiently applied to research in stable settings for decades are difficult to employ in conflict areas. Systematic data collection through surveys and other tools fail due to war – time population movement, significant number of potential participants in hiding and the security situation dictating from where and whom result can be obtained (Ibid: 356, Barakat, Chard, Jacoby and Lume 2002: 993).

**Challenges of Research In The Built Environment**:
For the built environment researchers whose objective is to engage in participating community based field research, the availability of filed work references (including densification of relevant, timely and topical issue as well as community willing to participate in research) is a minimum prerequisite for success. Nevertheless, no matter how prepared one is during the build-ups to conducting field works, one would always be surprised by the degree of professional challenges experienced during the field work stage of the research process. Furthermore, one would be equally surprised to find little methodological or theoretical guidance within the existing research literature, relevant to doctorate field work challenges in general. Meanwhile, doctoral field works in the built environment in particular remains an under researched area -one seldom addressed in literature. It therefore, follows that a
Worthwhile research in the built environment in Nigeria is hampered by a number of factors.

- **The Traditional Built - Environment Professions Educational System:-**

The existing educational patterns in the built environment schools do little in creating an attractive research environment for students; by emphasizing intuitive design methods and de-emphasizing academic thought and values. The professions in the built environment have over the years attached status to practitioners and conferred only limited recognition for academic and research pursuits, (Sterling, 2009). However, integrating designs, research and practice can be viewed as a new strategy for achieving a productive dialogue about the visual environment (Sanoff, 1991). More so as there is a growing dynamism and complexity in modern buildings, environment and building codes as well as the society.

- **Inadequacy In Human Resources:–** It is admitted in the 2004 report by the Nigeria University Commission that human resources to conduct research in Built Environment disciplines are still present in Nigeria Universities and Research Institutes, but their capacity in terms of competence, commitment and population is inadequate. This problem is further compounded by the excessive brain drain currently being experienced in the country leading to very few hands left to attend to the daunting environmental challenges.

- **Paucity of Research Funds**:- This is a leading factor hampering research and development in Africa and Nigeria in general, particularly in all professions under the Built Environment sector. . According to NUC report of the impart assessment of Research Grants and related activities in Nigeria Federal Universities, 2009, fiscal resources needed to fund and sustain research are meagre and where allocations for such are made and available, they are often misappropriated It is also on NUC record that for the past one and half decades, Nigerian Universities expended over 98 percent of recurrent expenditure paying salaries and

allowances and 2 percent on maintaining services, with zero allocation for research. Meanwhile, of the total fund budgeted for research between 1999 and 2000, less than 20 percent were actually allocated to NUC by Government as shown in table 1 herewith, and out of these, less than 50 percent was actually allocated to the Universities, and out of this allocation, less than 3 percent of the money was utilized for research.. Research activities over the years have been self-funded, that is, the money spent comes from parents and the meagre salary / income of the researchers (graduate students, staff-in training, academic staff or self-determined individuals and professionals. This is a fiscal cranium where research can never thrive and will be stifled.

Table 1: Research Grant Allocation and Releases from 1990- 2003.

| S/N | Year of Release | Allocation | Amount Released |
|---|---|---|---|
| 1 | 1990 | 24,000,000.00 | 22,075,371.00 |
| 2 | 1991 | 51,266,530.00 | 16,645,034.00 |
| 3 | 1992 | 14,500,090.00 | 17,472,972.00 |
| 4 | 1993 | 122,182,102.00 | 122,182,102.00 |
| 5 | 1994 | 132,213,817.00 | 98,662,255.00 |
| 6 | 1995 | 155,534,575.00 | 73,973,806.00 |
| 7 | 1996 | 153,842,000.00 | 50,583,686.00 |
| 8 | 1997 | 194,013,732.00 | 122,020,447.00 |
|  | 1998 | 215,618,453.00 | 149,993,549.60 |
| 9 | 1999 | 302,735,543.00 | 183,501,468.00 |
| 10 | 2000 | 448,127,780.00 | 612,666,910.00 |
| 11 | 2001 | 206,410,910.00 | 206,410,619.00’ |
| 12 | 2002 | Not available | Not available |
| 13 | 2003 | 73,435,618.00 | 73,435,618.72 |
|  | Total | 2,146,657,150.00 | 1,799,637,713.32 |

Source: Okebukola P. (2004)

**Weak Research – Industry Collaboration.**

The link between theoreticians and practitioners is not well fostered. If it were well fostered, research solutions would have for long emerged for the quibbles in the built environment

professions. It is believed that fruitfulness of any research on the human environment would be predicted on continuous feedback with a cooperative collaboration between researchers and professionals who often utilize such research products. (Okebukola P. (2004).

**Methodology.**

The study made use of data and information from both primary and secondary source. Primary data were collected through my experience during the field work in the Federal Capital Territory (FCT) while carrying-out a research in "Designing for Sustainable Communities in Abuja, the Federal Capital Territory of Nigeria" – during which the six Area Councils in the FCT were the primary research fields. Secondary data includes relevant information from related studies such as published research works and findings as well as documentations by the National Universities Commission of Nigeria.

**Result:-**

Summarily therefore, the researcher in the built – environment sector of Nigeria should be prepared to face the under-listed challenges especially in the Federal Capital Territory,

* Limited data availability.
* Lack of academic capacity
* Socio-political confrontation, like skepticism on motive for questioning
* Socio-cultural barriers to free gender interacting with strangers.
* Difficulty in accessing quality or key respondent of interest due to bureaucracy and protocol.
* Lack of fellable funding for the project in general.

**Recommendations:**

After carefully studies studying and experienced experiencing the challenges of conduction conducting field-work in Nigeria with particular focus on the Built Environment sector, the paper recommend as follows:-

- Government through the various Agencies and development partners should be more responsible to the funding of researches in the country in general and the built-environment sector in particular. This is because it is through research that effective policies are formulated that enhances sustainable development.
- The built-environment schools should not only be practical in the structuring of its courses structure but should also be research oriented in order to prepare and propel students to a future endeavour in the research world.
- Both practitioners and academics should create synergy in the area of data collection and achieving of research findings for referencing.
- The researcher in the built-environment sector should have adequate exposure in literature review so as to be duly prepared for the numerous challenges that abound in the field when carrying out fieldwork.

**Conclusion.**

Revealed in this paper are the challenges often encountered by researchers, especially in the built environment sector while conducting fieldworks. This challenges are easily surmountable if researchers are abreast with the possibilities of encountering them. In addition, the paper reveals that fore knowledge of these challenges reduces stress usually encountered by researchers in the sector.. It is further shown that the built environment sector has paucity of research reference materials; due partly to the design structure of their training

programs as well as the zero budget allocation to research in Nigeria Universities over the years.

However, It is acknowledged by societies that research forms the basis for meaningful development; specifically so in the built environment sector where research brings about innovations in construction materials and techniques. Therefore. Meaningful development in the sector is possible, only if the educational system is repositioned to address adequately the challenges faced by researchers in the built environment sector.

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# ARCHITECTURE AND THE DESIGN OF SUSTAINABLE COMMUNITIES.

**By**

**Ramatu Aliyu, Dr. OJ Ebohon, Dr. L. Gyoh,**

…….
***Keywords**: Architecture, Sustainable Communities, Development Design, Architectural Profession*
……

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## ABSTRACT

*The human habitat or the built environment is faced with numerous challenges - rapid and uncontrolled developments, spatial congestion, growing inequalities of access and outcome of urban opportunities, inadequate and failing infrastructures and services; all of these problems persist, albeit to varying degrees across global cities, they are more pronounced in cities of the developing world. While numerous examples of the various efforts and initiatives undertaken to mitigate these problems across global cities abounds, a common limitation exists, which is the little attention paid to the role of communities in creating and enhancing sustainability attributes and prosperities of cities. In other words, a sense of 'Communities' is designed out many cities, and which this is increasingly being recognized as a critical stumbling block to sustainable growth and prosperities of cities, it brings to the fore, the pivotal role of architecture in delivering 21st century cities of sustainable communities. It is widely acknowledged that poor Architectural Designs impoverish the built environment, and has adverse impacts on quality of life, denying residents a sense of place, perpetuating loss of identity, resulting in fragmented communities that are inherently unsustainable. In contrast, designing to the ethos of sustainable communities generates 'good architectural design' that enables social capital formation, creating not only the opportunities for stakeholders to participate in urban decision making process, but also to take ownership of urban growth and development initiatives - adding value to the built environment. This paper, through the use of critical literature review and theoretical framework, argues that despite the glaring role and significance of architecture in sustainable community development, few architects are taking up the challenges, which is detrimental to the creation of 21st century sustainable cities – where growth is tailored to the carrying capacities of cities, and urban inequalities bridged. This paper brings to the fore, the critical role of the architectural profession in sustainable communities' development, and highlights the need for the profession to*

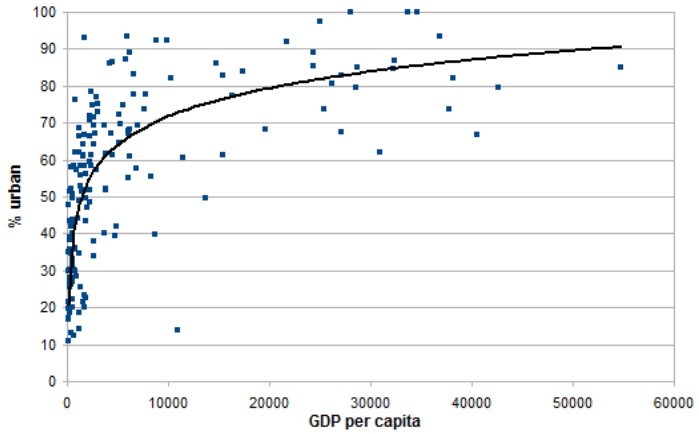
*champion this course, if it is to retain its premier position at the helm of the procurement process.*

## Introduction

Cities are distinct human settlements, concentrating people, commerce, talents and resources, institutions, culture and information, and where the synergies between various sectors and sections of the socio-political economy are harmonised (Sassen, 2006). Such agglomerations or concentration of specialised and complimentary activities offer cities huge advantage, as places for innovation, knowledge incubation, specialisation, and entrepreneurship, all critical to economic growth and prosperity of cities (UN-Habitat, 2011). Indeed, cities generate more than 80 per cent of global GDP and the largest 600 cities with just only 20 per cent of global population account for 60 per cent of global GDP (UN-Habitat, 2011).

As shown in Figure 1, economic growth has always stimulated urbanisation (UN-Habitat, 2010), explaining the rapid urbanisation of the global population over the last 40 years (UNFPA, 2007), and in 2008 for the first time in human history, more than half of humanity lived in urban areas. Urbanisation is an irreversible process, and estimates show that by 2015, there will be 564 cities with over I million people, and 75 per cent will be located in the developing countries (UNEP, 2004). This is particularly the case for Africa and Asia where urbanisation rate is expected to grow from the current 46 percent to more than 80 per cent by 2030 (UN, 2010).

**Figure 1: Urbanization and GDP**




Source: UN (2010), percentage urban; World Bank (2010), GDP per capita

As cities emerge as catalysts for economic growths and development, so they have become major sources of threats to the global natural environment (Eden, 2000), and these threats derive mainly from their ecological footprints. Cities consume huge amounts of environmental goods and services usually imported from beyond their boundaries and at the same time emitting effluents such as carbon dioxide (C02) and other greenhouse gases with

trans-boundary implications (Boydel 2004). A study of Vancouver and the Lower Frasier Basin residents by Rees and Wackernagel (1996) is seminal and instructive, recording instances of ecological footprints overshoot factors of 178 and 13 respectively. Similar studies of other cities have also recorded significant ecological footprints overshoots (IIED, 1995; Folke, et al. 1994). These studies have confirmed that the ecological footprints of cities transcend their immediate boundaries by huge distances (Rees, 1992). For example, a typical European City of a million inhabitants will on a daily basis import: 11,500 tons of fossil fuel and 320,000 tons of drinking water. In return, it will export 25,000 tons of carbon dioxide into the atmosphere, 300,000 tons of waste water, and 1,600 tons of solid waste, highlighting the vital linkages between urban functions and lifestyles on the one hand, and on the other, the pressures cities exert on natural environments beyond their boundaries.

However, the ability of the global natural environment to continue to support urban functions and lifestyles, as defined by its carrying or regenerative capacity remains doubtful (UNEP, 2012). This owes to the insatiable demands for natural resources and attendant effluents and pollution running alongside rapid rates of depletion of these resources on the one hand, and on the other, the pronounced dynamic manifestations of global environmental deteriorations, occasioning global scarcity of natural resources. For example, a study of the 24 identifiable ecosystems critical to human existence found that 63 percent have been seriously degraded out all usefulness, forcing 1.3 billion global citizens, mostly in the developing world, to live in fragile ecological environments (UNEP, 2012). While technological innovation has the potential to mediate scarcity of natural resource commodities, natural resource amenities have proved difficult, and are dwindling rapidly (Krautkraemer, 2005). Thus, global natural resource scarcity is manifesting in various form and dimensions, posing huge constraints on the growth and prosperity of cities.

Some of the immediate challenges confronted by global cities include how to provide effective and efficient infrastructures and services in the face rising urbanisation and dwindling natural resource commodities and amenities. Given that more than 1 billion global citizens have no roofs over their heads, and similar number living in overcrowded and inadequate accommodation, this problem is compounded by continuing growth in urban population and urbanisation. Evidence abound showing the rapid encroachment and displacement of urban ecosystems, as the ecological footprints of the built environment expand, exposing the poor who usually predominate in such locations of ecological hazards.

These threats and attendant manifestations in cities have led to calls for sustainable cities of the 21st century. Sustainable cities of the 21st centuries are innovatively created and not "*mere collection of commodities or places for recreation but thevery source of life and wellbeing" (*Wackernagel and Rees 1996). In other words, the 21st century cities must evolve and develop into ecological spaces of diversified ecosystems teeming with life, and forming ecological inclines that link to suburban and rural areas. In this context, human wellbeing, effective urban design, and the health of the ecosystem are intertwined and inseparable, underpinning calls to develop and remodel global cities into sustainable cities capable of meeting the urban challenges of the 21st century (UN-Habitat, 2011).

**Sustainable Development and Cities**

The concept of sustainable development reflects the concerns that cities cannot sustain their huge ecological footprints, and the realign global growth and attendant demand for natural resources with the carrying capacity or the regenerative capacity of the natural environment. The desire that irrespective of how development is configured and implemented to meet current needs, it must not compromise the ability of future generation to fulfil their own material needs from a healthy natural environment (WCED, 1987, Batie 1981). Cities are an appropriate platform for solutions to global environmental degradation and pollution since they concentrate most of the causes and solutions to global environmental degradation (Eden, 2000; Hardoy, et. al. 2006). As already indicated, cities consume huge amounts of environmental goods and services usually imported far beyond their boundaries and at the same time generating wastes and pollutions that are difficult to contain within national boundaries.

However, a huge philosophical debate greets the concept of sustainability, this is derived from whether the course of sustainable city is worth pursuing or superfluous, resulting in two contrasting philosophical positioning – the constraint growth view (Batie, 1989; Rees, 1992a, 1992b; Arrow et. 2004), and the resource maintenance view (Wackernagel and Gallil, and 2012; Naess, 1995). At the heart of the difference between the "constrained" and "maintenance" views on sustainable development is whether or not natural capitals can be substituted by man-made capital – the "weak" and "strong" sustainability debates (Haughton and Hunter, 1994; Daly and Cobb, 1989; Neumayer, 2003). If man-made and natural capitals are easily substitutable – "weak sustainability", the fear of global resource constraints is misplaced, as education and technological progress will permit natural capital stock to grow much faster than it depletes to assure future generations a higher quality of life (Neumayer, 2007, Johnson, 2007). This view is largely shared by most governments and multilateral and unilateral institutions, who see growth as inevitable owing to massive global poverty and inequality within and between nations, which can only significantly ameliorated through growth (WCED, 1987, Korten, 1992, Dresner, 2002; Purvis and Grainger, 2004).

The 'resource maintenance' approach emphasises the inherent value of the natural environment and all life forms, and as a result, the protection of the natural environment is considered an overriding priority over and above the pursuit of economic growth (Wackernagel and GalliI, 2012; Naess, 1995). The functions of natural capital underscores its significance to development, and transcends the provision of food and raw materials but also performs other critical life support functions for which there are no substitution possibilities (Dietz and Neumayer, 2007). Thus, the only condition under which natural resources are to be used is only to fulfil "vital needs" and "lethal desires" (Naess, 1995; Daly and Cobb, 1989). Noting that the huge global environmental degradation witnessed in the last century had very little to do with the fulfilment of basic needs, a change in attitude away from capital accumulation upon which desires rather than basic needs are fulfilled, is advocated as the most effective way of sustaining and enhancing the regenerative or carry-capacity of the eco-system (Naess, 1995).

However, finding common grounds between these two competing perspectives on sustainable development, which Neumayer (2003) considered non-falsifiable, is fundamentally important to the concept of sustainable development because it goes to the heart of whether or not on the one hand, actions should be taken, and on the other, the nature of actions to be taken to achieve sustainability and development. It is within this context that the theoretical framework for sustainable community design, as a holistic and dynamic solution to global environmental problems is explored.

**Sustainable Community Design**

It is important to briefly explore the concept of sustainable community, and according to RIBA (2003), it is a process that continuously provides most of the diverse needs and desires of the community without compromising the needs of other communities, fulfilling the inter and intra generational equity imperatives of sustainable development. This definition, by emphasising needs and desires draws a balance between 'strong sustainability' that sees basic needs as the only worthwhile development goals worth pursuing in the interest of the environment; and 'weak sustainability' that argues for both needs and desires to be fulfilled but albeit within the limits of the carrying capacity of the ecosystem. Nevertheless, sustainable communities are places that build on their assets, value healthy ecosystems, use resources efficiently, and actively seek to strengthen and enhance the local economy. Other emphasis include ecosystem protection; meaningful and broad-based citizen participation; and economic self-reliance. Additionally, sustainable community seeks improved public health and a better quality of life for all its residents by limiting waste, preventing pollution, maximising conservation and promoting efficiency.

Furthermore, the significance of sustainable community development to sustainability can be seen in the practical difficulties of attempting to achieve sustainability on a global or national scale (Roseland, 2012). As Yanarella and Levine (1992) rightly observed, pursuing sustainability at the global or national levels have achieved relatively little success because of the enormous changes required to drive it, particularly the degree of coordination and cooperation required across political divides within and between countries of diverse socio-economic and environmental problems. The ineffectiveness of such a top-down approach to sustainable development relative to the speed with which solutions to global environmental problems are sought was aptly captured at the UNCED's 1992 Rio Earth Summit, resulting in the UN's Agenda 21 programme of action on sustainable development (UNCED, 1992). Chapter 28 of Agenda 21 specifically calls for each community to formulate its own **Local Agenda 21**:

> "*Each local authority should enter into a dialogue with its citizens, local organizations, and private enterprises and adopt 'a local Agenda 21.' Through consultation and consensus-building, local authorities would learn from citizens and from local, civic, community, business and industrial organizations and acquire the information needed for formulating the best strategies*." (UNCED, 1997).

Indeed, the importance of sustainable community approach to sustainable development is underscored by the fact that not only is it at the community levels that most people first encounter the environment, but also the fact that sustainable development transcends the natural environment to incorporate other essential elements that define sustainable development such as equity and governance (Chansomsak and Vale, 2009). Thus, by focusing on sustainability at the local level, changes that matter to people are brought to the fore and tackled immediately, and this not only facilitates effective participation but encourages local citizens who after all are equipped with better knowledge of their natural environment to take ownership of local sustainability initiatives and policies (Baton, 2000). Indeed, the observation of Yanarella and Levine (1992) is instructive; they argued that

communities constitute the level of social organization where the impacts of environmental degradation are mostly felt and where interventions are most likely to be quicker, successful, and more noticeable. This view is shared by many, leading Chansomsak and Vale (2009) to describe sustainable community development as signifying necessary changes that drive a community towards sustainability.

From the foregoing discussion, it is evident that communities as social organizations, afford not just effective and enabling environment conducive for stable political commitment inherent in the concept of sustainable development, but more importantly, renders sustainable community development as the ultimate vehicle for delivering sustainable development on a larger scale (Yanarella and Levine, 1992). The reason for this, according to Yanarella and Levine (1992), is that sustainable community development becomes the process replicable elsewhere through which the concept of sustainable development becomes widely accepted, delivered and validated. This owes to the huge flexibility, both in terms of strategies and policies associated with sustainable communities' development that allow for tailor-made strategies and solutions to environmental problems. As environmental problems can be locational-specific, the diversity of local knowledge found within and between communities can be important in tackling environmental problems.

However, while the role and significance of sustainable communities' development in the delivery of sustainable development is not in doubt, serious concerns have been raised about the capacity of communities to organise socially and cohesively, and remain active over time (Wilkinson, 1991, Tilly, 1973, Luloff, 1990). Observers have noted that while communities do act, they do so occasionally and mostly in response to crisis (Tilly, 1973; Luloff, 1990; Wilkinson, 1991). Indeed, Bridger (1992) elaborated further that even in active communities, problems of competing objectives and coordination pose real threats to sustainable community development. Despite these shortcomings, Sampson (1988) and Cuba et al., (1993) argued that little evidence exists to suggest that the significance of community, as an interactional phenomenon has diminished to an extent to question its usefulness as a leverage for sustainable development. This is evident in the resurgent interests in local approaches to sustainable development (UNEP, 1990).

**Architects and Sustainable Communities Design**

The calls for planners and architects to implement design principles that integrate the social, economic, and ecological aspects of a region into a balanced and holistic entity to guide urban development puts architects at the forefronts of delivering sustainable development. Indeed, sustainable community development has been defined by urban planners as the 'New Urbanism', the main focus being the construction of physical scaled communities of mixed land uses that encourage diversified mode of transportation between end points, variety of housing typologies to meet the needs of diverse population, the preservation of uncultivated land and open spaces, and where public spaces are a central feature of community life (Calthorpe, 1993; Duany and Plater-Zyberk, 1994).

Thus, the role of built environment professionals, particularly the architects in enhancing community development through design is gleaned from the arguments advanced by Calthorpe (1994) that:

> "Understanding the qualities of nature in each place, expressing it in the design of communities, integrating it

> within our towns and respecting its balance are critical to making the human place sustainable and spiritually nourishing" (Calthorpe, 1994).

Indeed, the view that architecture ***can make or unmake a community*** is widely shared (Lennertz, 1991; Duany and Plater-Zyberk, 1994). Lennertz (1991) argues that design affects behaviour while Duany and Plater-Zyberk (1994) consider the structure and function of a community as interdependent, and noting that design is a sophisticated tool that can structure functional relationships, they believe that designers' decisions permeate the lives of residents not just visually but in the way residents conduct their lives. Thus, architects have pivotal roles to play in creating the sustainable communities. This view finds root in the belief that "environmental crisis is a design crisis" (Van Der Ryn, 1996), indicating that design can influence behaviours, and tackling and mainstreaming sustainability into urban design principles-presents huge opportunities for minimizing the ecological footprints of urbanisation. Cities are products of architecture and the built environment is the significant and physical element of the community, and the significance and fortunes of which crucially depends on the quality of design (Scottish Executive, 2005). According to the Scottish Executives (2005):

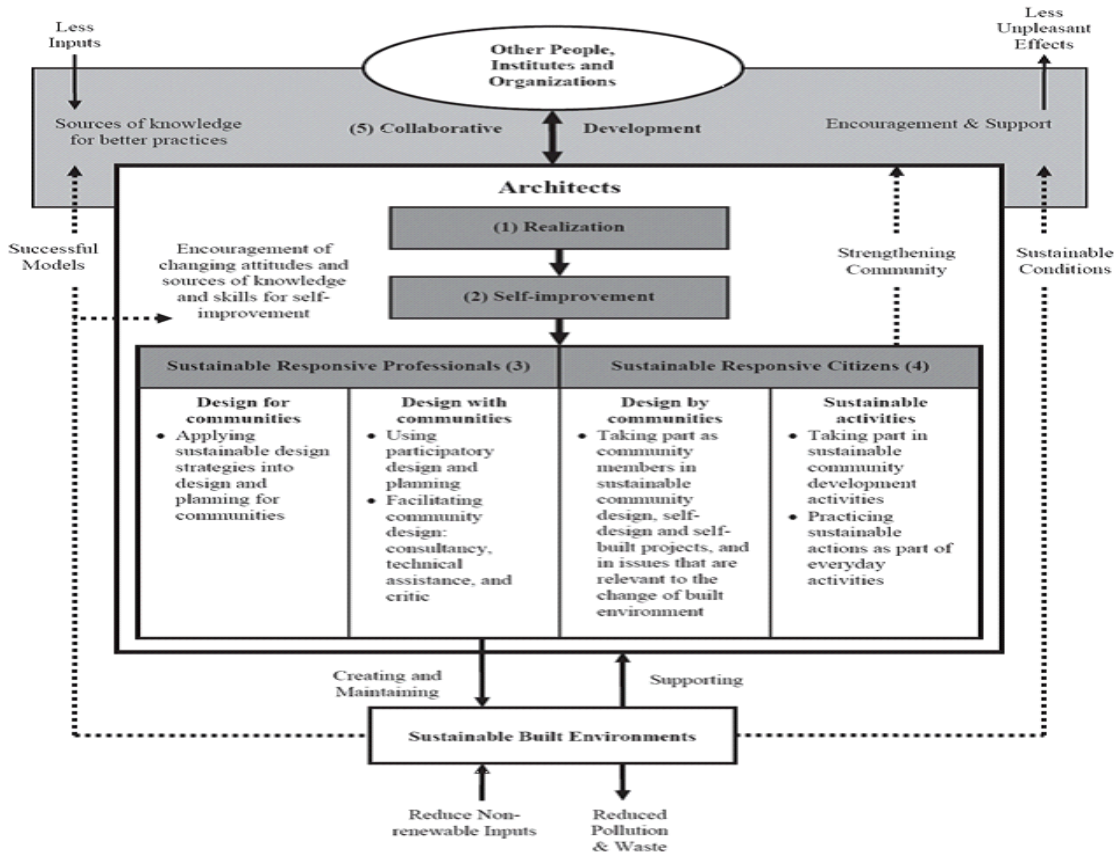
> "Poor design impoverishes the built environment, Adversely affecting the quality of life for residents, Denying sense of place and precipitating loss of identity and the fragmentation of communities. The long-term consequences of poorly designed development are inherently unsustainable. In contrast, good design represents an investment in Scotland's people and places, and adds value to built environment"

Thus, designing to meet basic requirements, such as access to local amenities and open space; a pleasant stimulating place to work; and opportunities for leisure, fresh air and a quiet, clean and safe environment represents a sustainable built environment that is inclusive to guarantee equality of access and outcome of urban opportunities.

Evidence abound, showing that architects are not only best placed to advance the local ethos that underpins sustainable development but are known to have championed this course in the past. "Community Architecture" is not a term unfamiliar in the architectural world, depicting engagement with local communities to allow active participation in the planning, design and delivery of infrastructures and services to local communities (Hamdi, 1997). Various models have been used by architects to engage local communities, including the assignment of certain decisive roles to end users and sharing decisions responsibly with stakeholders (Habraken, 1976) or where decision making responsibility rests chiefly with the community (Habraken, 1986, Wulz, 1990). One of the many advantages of this level of community engagement is in facilitating and tuning infrastructures and service provisions to the needs of local communities who in turn take ownership, obviating the need for correction expenditures in the long term, especially where infrastructure and service provisions turn out to be inappropriate.

As shown in figure 1.3, Chansomsak and Vale (2009) have designed a framework illustrating the pivotal roles of architects in community development. Firstly, they assert that as professionals, architects have the capacity and specialists skills to tailor specific strategies to meet specific requirements of deferent communities. This is hardly in doubt given the skills at the disposal of architects to design to specific site constraints, as no two sites are the same, and this conforms with the views that in the creation of sustainable communities, it is imperative that architects design "with people and for places" (McLennan, 2004; van der Ryn and Cowan, 1996; Chansomsak and Vale, 2009)

***Figure 1.3 Relationships of Architects Roles & five Principles for Architects Actions in Sustainable Community Development***




***Source:*** *Chansomsak and Vale, 2009*

Indeed, Egan (2004) noted that sustainable communities do not just happen, they come about through conscious efforts channelled through planning and design that require relevant skills, tools, and policies. A critical look at the characteristics of sustainable communities by Peck, et al. (2000) presented in Table 1, and further grouped into seven components (Egan, 2004, RIBA, 2004) in Figure 2 show clearly, the centrality of architects to sustainable community development, as these characteristics and attributes are the skills to which architects are trained and qualified, defining the specialism of architecture.

**Table 1**

**Features and Characteristics of Sustainable Communities**

| **Peck and Tomalty (2002)** | **Egan (2003)** | **RIBA (2004)** |
|---|---|---|
| • Ecological Protection<br>• Density and Urban Design<br>• Urban Infill<br>• Village Centres<br>• Local Economy<br>• Sustainable Transport<br>• Affordable Housing<br>• Livable Community<br>• Sewage and Storm Water<br>• Water Conservation<br>• Energy Efficiency<br>• Reduce, reuse and Recycle | • Flourishing local economy to provide jobs and change;<br>• Strong leadership to respond to change;<br>• Effective engagement and participation by local people, groups and businesses, especially in the planning, design and long term stewardship of their community, and an active voluntary and community sector;<br>• A safe and healthy local environment with well-designed local and green spaces;<br>• Sufficient size, scale and density, and the right layout to support basic amenities in the neighbourhood and minimise use of resources (including land);<br>• Good public transport and other public infrastructure both within community and linking it to urban, rural, and regional centres;<br>• Buildings – both | RIBA accepts all the sustainable communities attributes enumerated by Egan (2004) but added a further seven attributes:<br>• Well designed, high quality and robust buildings and facilities that respond to local requirement;<br>• The need to use local resources and skills both in the delivery and during the life of the community, including food production and distribution;<br>• Integrated and balanced vehicle management;<br>• Further environmental targets including, extensive use of de-centralised and renewable energy generation and an increase in bio-diversity;<br>• Good and on-going management and maintenance<br>• Support for innovation and experiment |

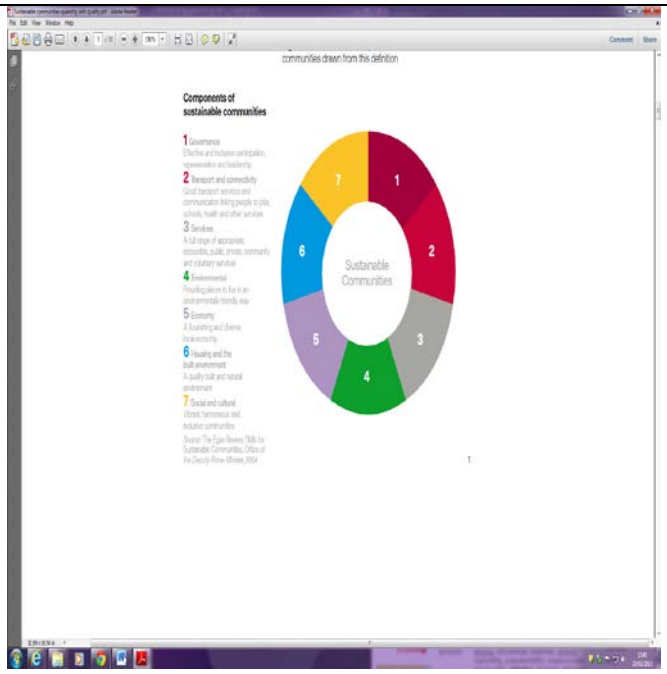
| | | |
|---|---|---|
| | individually and collectively – that can meet different needs over time, and that minimise the use of resources;<br>• A well-integrated mix of decent homes of different types and tenures to support a range of household sizes, ages and incomes;<br>• Good quality local public services, including education and training opportunities, health care and community facilities, especially for leisure;<br>• A diverse, vibrant and creative local culture, encouraging pride in the community and cohesion within it;<br>• A sense of place;<br>• The right links with the wider regional, national and international community; | |

**Source:** Compiled from Peck et. al., (2002); Egan (2004); RIBA (2004)

However, it is stressed that despite the abilities of architects to lead the debates on sustainable development, the architectural profession continues to resist the concept of sustainability, and has been slow in its response. This explains the failure of the profession to lead the sustainability debate, which all indications show it is well placed to assume. Recent changes implemented by the Royal Institution of British Architects (RIBA) serve as a case in point where its sustainability commitments are now reduced to checkpoints and rendered "optional add-on" in its new 'Plan of Work' (Mark, 2013). Also, it is no coincidence that the American Institution of Architects (AIA) has remove sustainable design from members' annual continuing educational requirements (Hosey, 2013). AIA based its decision on its belief that

sustainability has taken roots, a point vigorously challenged by Hosey (2013) who pointed to the hostilities of America's renowned architects towards the concept of sustainability as the reason. For example, Frank Gehry considers sustainability as not only "***bogus***" but dismisses as ***"political agenda"*** while Peter Eisenman opined that sustainability "***has nothing to do with architecture***". Such confounding views of sustainability by influential architects diminishes the importance and significance of sustainability to the built environment. In particular, Hosey (2013) argues that AIA's position on sustainability is contradictory in that on the one hand, it is emphasising carbon neutrality through its "Architecture 2030" initiative, while on the other, it is de-emphasising sustainability education to its members. On the contrary, it requires the active participation of all stakeholders – local communities and built environment practitioners, particularly the architects working together to deliver sustainable community development (Brady, 2011).

**Figure 2 Components of Sustainable Community Development**




**1.** Governance; Effective and inclusive participation, representation and leadership.
**2.** Transport and connectivity.
**3.** Good transport services and communication linking people to jobs,schools, health and other services.
**4.** A full range of appropriate, accessible, public, private, community and voluntary services.
**5.** Environmental; Providing places to live in an environmentally friendly way.
**6.** A flourishing and diverse local economy Housing and the built environment; A quality built and natural environment.
**7.** Social and cultural; Vibrant, harmonious and inclusive communities.

**Source:** RIBA (2004)

Several reasons have been advanced for Architects' lack of enthusiasm about sustainable development, and hence sustainable community development (Stott, 2013; Altomonte, 2009; Hosey, 2013; Hindle and Rwelamila, 1998). Common to the various reason tendered is the findings that architectural education least prepares architects to value and mainstream sustainability into design. Penny Lewis, as reported by Stott (2013) indicated that architects are now slowly realising the power at their disposal to effect change but for which they have not been trained to exercise, and reflecting this as "modernism's greatest mistakes". Consequently, according to Penny Lewis, this has forced architects to remain within their 'shell', institutionalizing the timid and narrow confines from which architecture is being interpreted. The implication is that it forecloses the possibilities of engaging other disciplines such as humanities with huge capacity to benefit the architectural discipline. According to

Stott (2013b), "***architecture isn't all structure and management. Its aesthetics, poetics, symbolism, environmental psychology, social policy, and all other things which make up the wide-ranging field of "design***".

There is widely held beliefs that architectural education has to be revamped to engage other disciplines such as humanities to bring it closer to the people (Altomonte, 2009), and confront Christine Outram's question – "***Architects may love curve, but do they understand people?***" and went on to accuse architects of relying on "***rules of thumb and pattern books but rarely do in-depth ethnographic research***" (Outram, 2013). Thus, sitting "***at building site for an hour and watch people use space***" is not the same as "***speaking to people***". Indeed, Penny Lewis suggested that engaging with the community is one of the many ways architects could regain self-confidence and reverse the current situation where "**architects are doing little more than shaping proposals that communities themselves are forming, and applying a layer of technical knowledge to make these proposals- hence architecture's fight to remain relevant**" (Stott, 2013). This is further emphasized by RIBA (2011), arguing that while sustainable community development needs design professionals such as architects, the quality of the communities created will be dependent on the ability of design professionals to engage with local people and local issues from the beginning of the engagement initiative, designing "with" rather than "for" communities. Thus, the professional role of the architect in sustainable community development is envisaged as a process of "***preserving, improving, and creating the quality of built environment***" tailored to the need of the community. Indeed, Wates and Knevitt (1987) argue that this form of engagement means, rather than solving problems, architects become enablers.

## Conclusion

Revealed in this analysis is the critical importance of **architecture** and **architects** in the pursuit of sustainable development, given that more than 75 percent of all known factors responsible for global environmental degradation are traceable, in one way or the other, to the built environment. It is further shown that architects create the built environment, as a result, are better placed to address sustainability issues, given that these issues are much better addressed at the design stage, avoiding huge future correctional expenditure. However, the profession is shown to be slow to embrace sustainability, and several reasons were advanced but common to these are findings that architectural education would need to change and engage far more disciplines for enrichment.

Generally, architects have the skills to design the physical environment that encapsulates the enabling milieu for Sustainable Communities development. Urban form plays a significant role in sustainable community, and critical to achieving overarching goals of sustainable development. Architects are well positioned to assist in changing opinions, attitudes, and behaviours towards sustainable community development, and this can be done by using 'sustainable architectural language' that signifies a new beginning in relation with the natural environment.

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## The Architect as A City Changer

By

Ramatu Aliyu[$]

**Abstract**

'City Changer', as a concept, is the latest euphemism coined and launched at the Rio+20 conference aimed not only at promoting sustainable urban development but also at generating awareness of the need for a better urban future. The urban environment is faced with numerous challenges – rapid rates of urbanisation, dwindling natural resources to feed the insatiable demands by cities, inadequate and obsolescent infrastructure and services, traffic congestion, waste management and sanitation, growing urban inequality, and the rapidly deteriorating urban environment amongst others. There is nowhere else that these challenges are more pronounced than in Africa and Asia where 80 per cent of the total populations are forecast to live in towns and cities by 2030, and this will be against the background of dwindling and competing demands for scarce resources. The irony is that urbanisation is widely considered critical to the growth and prosperity of cities, especially where this is matched by effective and functional infrastructure and services. Growth and prosperity of cities are fundamental to the creation of 21st century cities - cities that are productive, competitive, innovative, and prosperous that offer better protection for the environment and ecosystem services to enhance the quality of urban life and wellbeing. A priori theorising would suggest that architects have a fundamental role to play in creating sustainable urban form that conforms to the idea of the 21st century city. This is particularly the case given their conventional role at the helm of the procurement processes that create the built environment. The question is whether the architectural profession is ready to take the mantle and fully engage with the concept and process of sustainability and development, which is critical to the delivery of the 21st century city. This paper argues that unless the architectural profession embraces the principle and practice of sustainability and development fully, it will surrender the ability and desire to be a city changer. It is expected that discussions in this paper will be of benefits to the architectural profession – education and practice.

**Keywords: Architect, City, Changer**

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**$** Ramatu Aliyu is an architect and a doctoral degree student at the Developing World Built and Natural Environment Research Unit, Leicester School of Architecture, De Montfort University, Leicester, LE7 9BH. Email:**ramatualiyu@yahoo.com**

## INTRODUCTION

'**Architects are city changers**' is a theme chosen by the International Union of Architects to celebrate the 2012 World Architecture Day. The immediate question that comes to mind is why does the city need changing? Available evidence shows that cities around the world are facing considerable challenges of various kinds – growing deterioration of the physical urban environment, rising urban poverty, widening urban inequality, increased scarcity of natural resources such as water and energy to sustain urban activities, and accelerating urbanisation. These challenges are expected to accentuate, as cities account for a disproportionate share in global population growth. It is expected that, by 2050, the proportion of the global population living in cities will reach the 70 per cent mark (UN-Habitat, 2010).

Over the last four decades, urban population has grown phenomenally with more than half of humanity living in urban areas in 2008 (UNFPA, 2007). As the developed countries are already heavily urbanised, the growth in urbanisation is occurring in Africa, Asia, Latin America, and the Caribbean – together adding 70 million new residents to global urban population annually, but the epicentre is Africa and Asia where 80 per cent of total population is expected to live in urban areas by 2030(UN, 2010). Additionally to rising urban population, rapid expansion of urban areas as well as increasing urban inequality and poverty are the other challenges facing cities (Donatellio, 2001, UN-Habitat, 2009).The manner in which these problems are converging is considered "dangerous" for cities (UN-Habitat 2011) owing to the possible stunting effects on growth and prosperity, which are crucially important to solving urban problems.

In addition to rapid rate of urbanisation, cities consume significant amount of natural resources, generate huge wastes, and concentrate poverty and inequality, requiring a healthy balance to be drawn between economic growth and the environment (Pacione, 2003). Thus, it is evident that for cities to prosper and achieve sustainable growth and development, the need to shape the urban fabric and develop the necessary tools to develop cities of the 21st century is overwhelming. These would be where cities are able to draw a healthy balance between

economic growth, clean environment, and a just and equitable society to facilitate and guarantee equality of access and outcome of urban opportunities to residents (Newman, et. al. 2006).

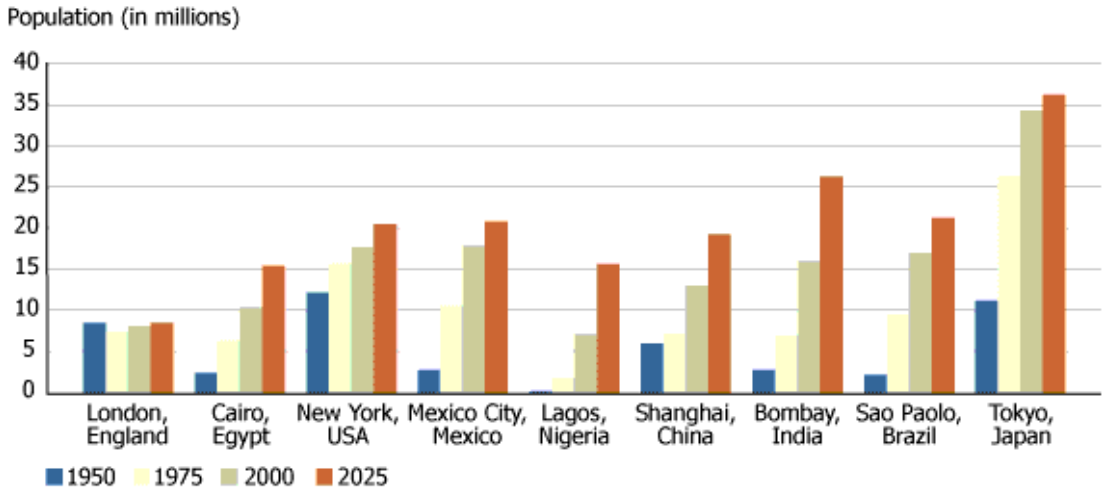
This laudable goal cannot be achieved without a drastic reinterpretation of the urban fabric in order to mitigate climate change effects, eliminate pollution, de-couple the intensity of urban growth and natural resource consumption, and mitigate climate change effects. In other words, this will require cities to be developed and structured to be inclusive, accessible, and equitable. It also requires that cities are developed and built with resilience firmly in mind to include not only resilience to natural and man-made disasters but also economic disasters. Similarly, cities must be environmentally friendly to attract the necessary entrepreneurs necessary for continuing growth and prosperity. Cities that combine these attributes are those most likely to seize advantage of rapid urbanisation to become the 21st century engines of growth. This is the fundamental change that cities must undergo to be able to assimilate the burgeoning urban population without compromising the integrity of the natural environment, and hence the prosperity and growth of cities. Arguably, architects, by nature of their profession and practice, embody the kind of change necessary to facilitate 21st century cities (Ebohon, 2011).

**Profile of Cities**

Ever Since cities emerged, as distinct human settlements, they have always concentrated economic activities, talents and resources, industry, institutions, culture and information, and where the synergies between different sectors of the economy are harnessed. Such agglomerations (concentration of specialised or complimentary activities) continue to underpin innovation, knowledge incubation and sharing, which may explain the pivotal role cities continue to play in facilitating productivity, growth and prosperity, and evidenced by the disproportionate contribution of Cities to national income (UN-Habitat 2010/2011).

This ‘engine of growth’ role of cities makes them highly dependent on the stock of natural resources within and outside their geographical boundaries. The natural resources that cities are so dependent are limited and are rapidly depleting at a time that urban population is rising rapidly. As evident in Table 1, the last four decades have witnessed phenomenon growth in the urban population.

**Figure 1 Growth of Urban Agglomerations, 1950–2025**




**Source:** United Nations, *World Urbanization Prospects: The 2007 Revision*.

However, Figure 2, which projects the 10 largest urban agglomerations from 1975 to 2025, clearly shows that the developing countries are where urbanisation will manifest.

**Figure 2 Top 10 Largest Urban Agglomerations in 1975, 2000, and 2025**

| **1975** | | **2000** | | **2025** | |
|---|---|---|---|---|---|
| 1. Tokyo, Japan | **26.6** | 1. Tokyo, Japan | **34.5** | 1. Tokyo, Japan | **36.4** |
| 2. New York-Newark, USA | **15.9** | 2. Mexico City, Mexico | **18** | 2. Bombay, India | **26.4** |
| 3. Mexico City, Mexico | **10.7** | 3. New York-Newark, USA | **17.9** | 3. Delhi, India | **22.5** |
| 4. Osaka-Kobe, Japan | **9.8** | 4. São Paulo, Brazil | **17.1** | 4. Dhaka, Bangladesh | **22** |
| 5. São Paulo, Brazil | **9.6** | 5. Bombay, India | **16.1** | 5. São Paulo, Brazil | **21.4** |
| 6. Los Angeles-Long Beach-Santa Ana, USA | **8.9** | 6. Shanghai, China | **13.2** | 6. Mexico City, Mexico | **21** |
| 7. Buenos Aires, Argentina | **8.8** | 7. Calcutta, India | **13.1** | 7. New York-Newark, USA | **20.6** |
| 8. Paris, France | **8.6** | 8. Delhi, India | **12.4** | 8. Calcutta, India | **20.6** |
| 9. Calcutta, India | **7.9** | 9. Buenos Aires, Argentina | **11.9** | 9. Shanghai, China | **19.4** |
| 10. Moscow, Russian Federation | **7.6** | 10. Los Angeles-Long Beach-Santa Ana, USA | **11.8** | 10. Karachi, Pakistan | **19.1** |

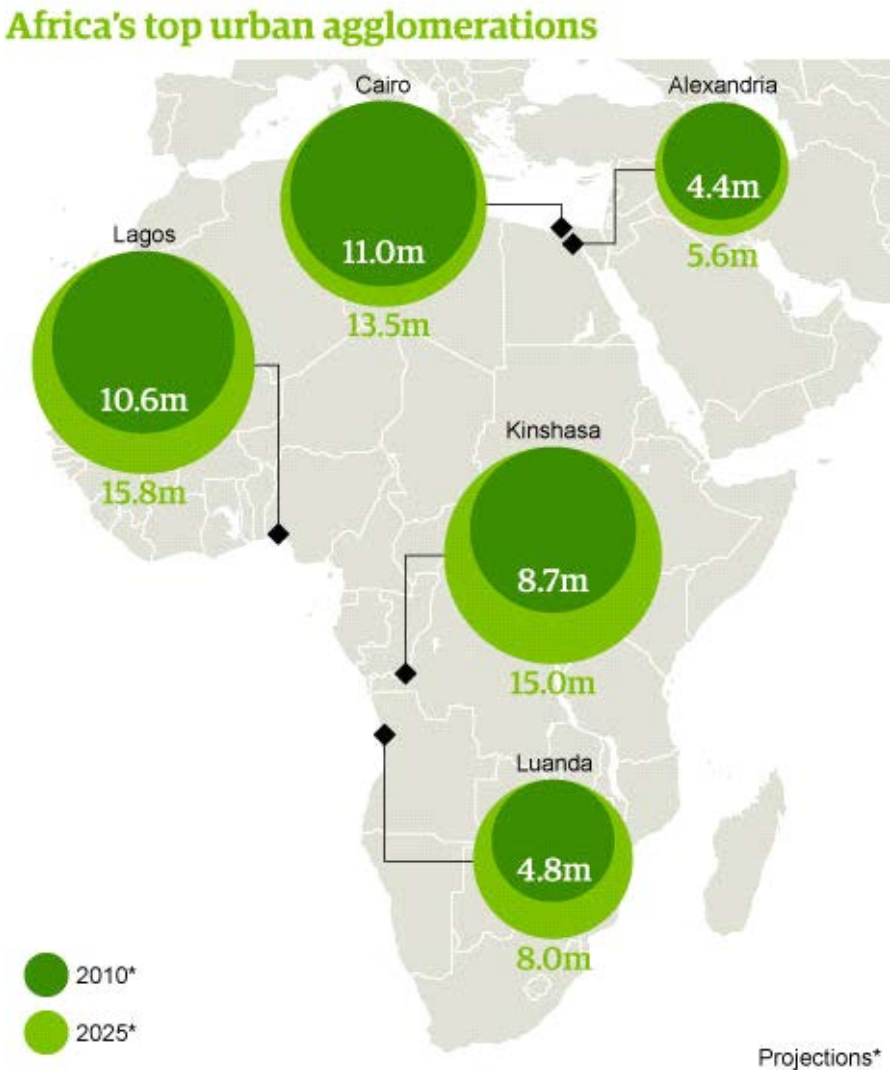
**Source:** United Nations, *World Urbanization Prospects, The 2007 Revision*.

Evidently, while sixty per cent of the ten most urbanised cities in the world in 1950 were found in the developed countries, this declined to thirty per cent by 2000, and by 2025, only twenty per cent of most agglomerated cities in the world will be found in the developed

countries. In other words, eighty per cent of such cities will be situated in the developing countries.

Africa has joined India and China as the third region of the world with a population of 1 billion people, this figure, according to the United Nations, is expected to double by 2050 (UN, 2007). By then, a continent of less than 500, 000 urban populations in 1950 will be looking to accommodate about 1.3 billion by 2050, by which time about 60 per cent of the population will live in towns and cities, and the populations of nearly all sub-Saharan African cities with more than a million people are expected to expand by an average of 32 per cent in the next 10 years. Cairo is presently Africa's largest urban area, with 11 million people, but as Figure 3 shows, it will be overtaken by Lagos and Kinshasa in 2025 with 15.8 and 15 million urban dwellers respectively.

**Figure 3**




**Source:** United Nations, World Urbanisation Prospects, The 2007 Revision

Another dimension to the growth of cities is the mega-city phenomenon, and recent UN study on mega-cities cited the 600km urban stretch between Ghana, Togo, Benin and Nigeria that links the whole region's economy, and the continuing expansion will have profound effects on West Africa.

**Challenges faced by cities**

Cities are faced with numerous challenges but the nature and severity vary across the different regions of the world. Generally, the major challenges are how to decouple cities natural resource consumption intensity. The urban environment is very resource intensive as demonstrated by the insatiable demands cities make on the natural environmental resources – energy, water, green and open spaces, building materials, food, and in return, discharges disproportionate amount of effluents into the environmental media. For example, cities

generate about 750 billion tons of urban wastes annually, and for measure, only 25 and 55 per cent of wastes generated in large cities are collected (UNEP, 1996).

Similarly, cities disproportionally account for $CO_2$ and other greenhouse gas emissions (GHG), with huge global consequences – climate change, global warming, desertification, rising sea level, flood, landslides, and bush fires to mention but just the few. For example, UN-Habitat (2004) indicated that an average European City of 1 million people imports 11, 500 and 320, 000 tons of drinking water, and in returns exports 25, 000 tons of carbon dioxide, 1, 600 tons of solid wastes, and 300, 000 tons of waste water into the environmental media. What this reveals, is the ecological footprints of cities, which extends well beyond urban boundaries. The Ecological Footprint is a resource accounting metric that seeks to determine how much of the regenerative capacity of our planet we use by quantifying the demand that human consumption and waste generation place on the biosphere. The measure of bio-capacity complements the Ecological Footprint, and tracks how much natural productive capacity is available to meet demand.

Urban density and city expansion impacts significantly on the environment, as altered areas to accommodate urban activities produce different forms of biodiversity that have direct impact on the quality of water, soil, air, and land. As shown in Figure 4, the proportion of built-up areas has increased by 75 per cent since the 1970, while forest land converted or depleted increased by 53%, and our carbon footprints have increased by 210 per cent.

**Figure 4**

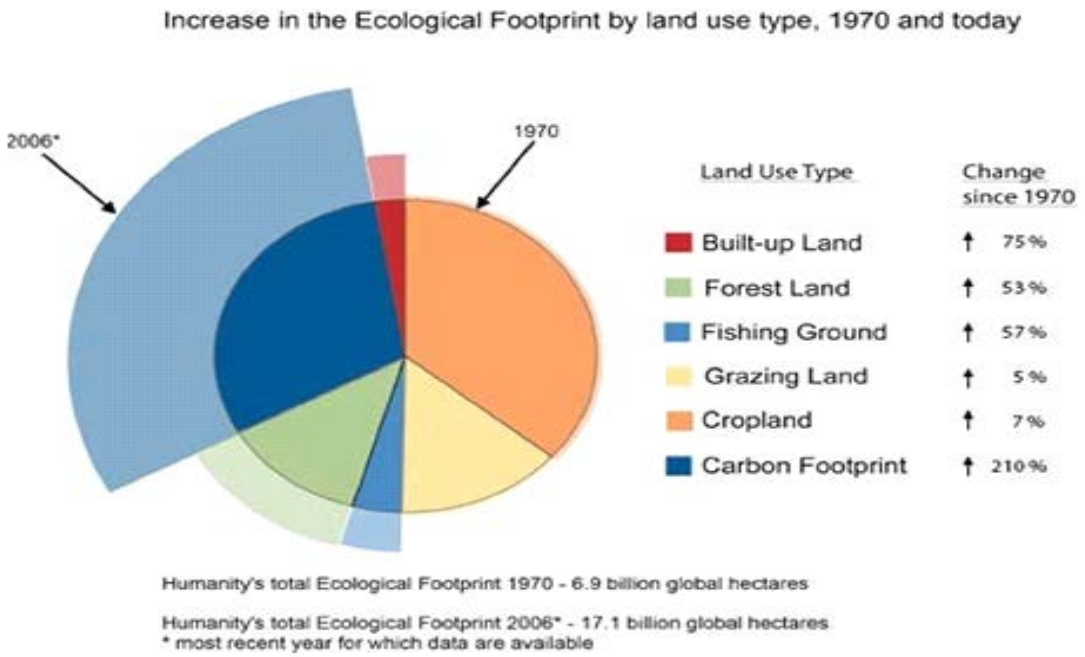
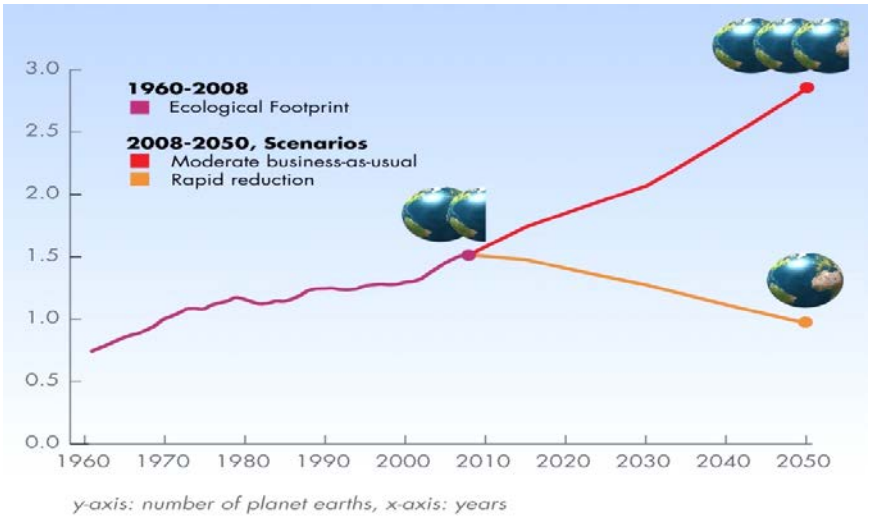



Figure 5 speaks volume, and clearly demonstrates the huge pressure currently exerted on the biophysical environment, indicating that our ecological footprints in 2010 was the equivalent of one and a half planets, and the evidence is very clear, if we carry on in the fashion of business as usual, we would require the equivalent of three planets by 2050 to maintain current demands on the environment.

**Figure 5**




**Source:**[www.footprintnetwork.org](http://www.footprintnetwork.org)

However, it also very evident that if we can drastically reduce the insatiable demands made on the natural environment, it is possible to enhance the integrity of the biophysical environment, but this is a real challenge given the endemic poverty between regions,

countries, and within cities. There is nowhere this is aptly demonstrated than in sub-Saharan Africa where the absence of basic infrastructures such as inadequate and poor quality housing, unpaved and congested roads, lack of electricity and other form of clean energy, inadequate clean and drinkable water, lack of green and open spaces prevailed.

**Figure 5**

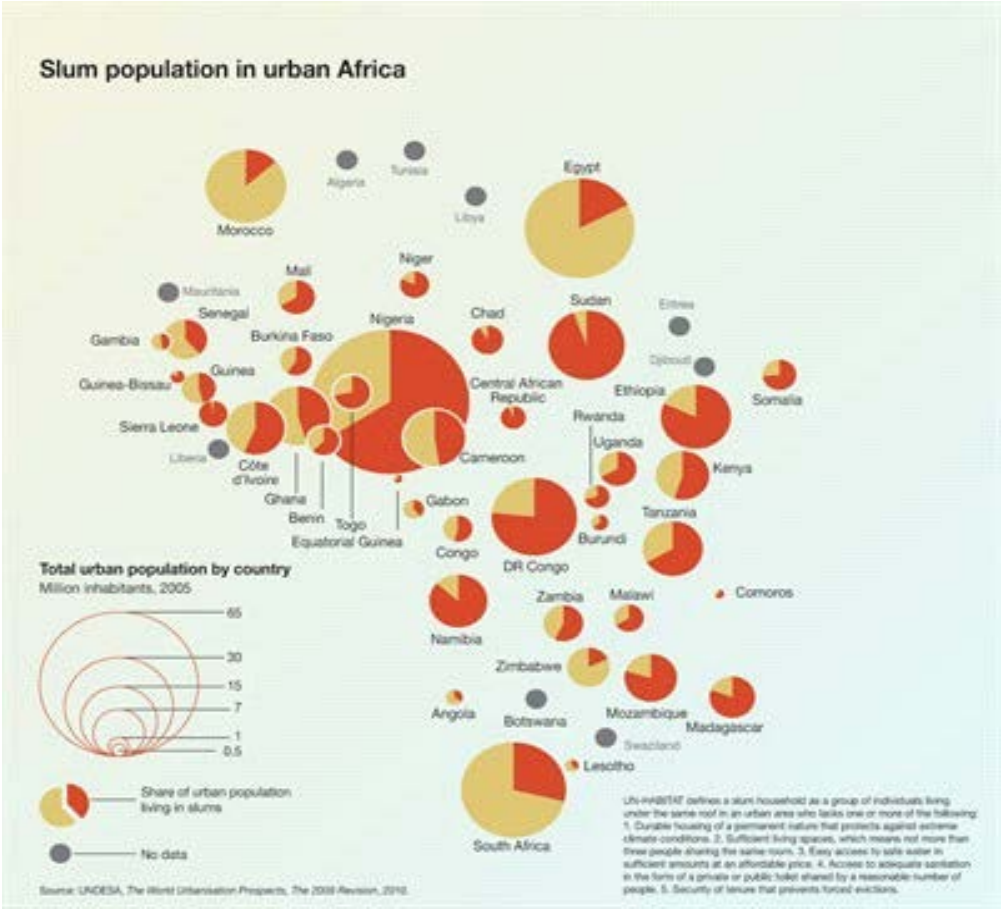



Figure 5 shows, for countries that data exist, the huge proportion of the urban population living in slums, reflecting the spatial inequality and poverty that exists in African cities (UN-Habitat, 2009). The challenge is how to meet these huge additional demands for basic infrastructure and services generate employment and income to combat urban inequality, and facilitate equitable access and outcome of urban opportunities. This is where architects can make a difference and why they can be city changers.

**Architects as City Changers**

There are three fundamental reasons why architects may be seen as effective 'city changers'. Firstly, a city is defined by its built form, and the urban form is essentially not more than the architecture or built form of a place. Given that the principal concerns of Architecture are planning, designing and constructing form, configuring space and ambience, and these reflect functional, technical, social, environmental, and aesthetic considerations of place. In this role, the architect creates, manipulates, and coordinates material, technology, light and shadow to produce form or the built environment. Above all, it is the architect's documentation – drawings, plans and technical specifications that defines the structure and functionality of buildings. Thus, architects are better positioned to address some of the numerous challenges facing cities.

Secondly, given that cities disproportionately account for a huge share in the natural resources converted into built forms on the one hand, and on the other, that 75 per cent of all known factors responsible for global environmental degradation and pollution are traceable to the built environment, puts the architect at the forefront of any initiative or discussions about how to change and enhance the sustainability attributes of cities. Thirdly, cities are seen as important drivers for urban sustainability, and given the role of the architect in the creation of cities, puts them at the forefronts of all stakeholders seeking to provide solutions, pathways, and policies to tackle the challenges face by cities. Indeed, urban form has been linked to the 'liveability' of cities  where it was ascertained that urban form remains one of the critical factors that can worsen or enhance the sustainability of cities (Addul and Hadi, 2007). This is why governments and other urban stakeholders are looking to the architects and the architectural profession for solutions to urban challenges.

There are various ways architects have been determined to make effective contributions to cities to be effective 'city changers'. Firstly, architects have the skills to design new urban form and reconfigure existing ones away from natural resource consumption intensity and environmental pollution. There is the genuine believe that the materiality of buildings, hence urban form, can be drastically reduced at the design stage but this requires the architectural profession to fully embrace the concept of environmental sustainability, hence the concept of sustainable architecture. Sustainable architecture emphasises demands designs that minimise harmful effects on human health and the environment, and this will greatly enhance the regenerative capacity of the biophysical environment.

In reality, a material is only considered a renewable or sustainable resource if it can be grown at a rate that meets or exceeds the rate of human consumption. Hardwoods, for example, can take up to 80 years to mature. The ecological damage related to the gathering of natural resources and their conversion into building materials includes loss of wildlife habitat, erosion, and water and air pollution. Habitat refers to the natural environment in which a species is found; usually, these areas are undeveloped. Cutting forests for lumber or removing vegetation for buildings destroys the habitats of animal and plant species. A microclimate may be immediately and severely altered by the removal of a single tree that protectively shaded the plants below.

Conventionally, price and social and environmental costs, has been the foremost consideration by the architects when designing buildings, and deciding or comparing building materials for similar functions. However, the final price of building materials paid to building merchants merely represents the manufacturing and transportation costs, but exclude social and environmental costs. These additional costs are borne by end users, the environment and society generally. This requires attention to be paid to the sustainability attributes of sites - ecosystem, micro-climate, materiality, and post-construction maintenance and affordability, and the socio-economic attributes of sites. The four mantras of sustainability – reduce, reuse, recycle, and recover should influence architectural design of urban form to reduce the burden of cities on the natural environment (Hamin and Gurran, 2009).

Other areas where the architects can change cities include the design of carbon neutral buildings, deploying alternative building materials and renewable energy such as solar, wind, and geothermal energy that allows reductions in carbon emissions and enhance post construction maintenance and affordability. High density and compact cities to reduce the use of motor cars and distance travelled to and from work, shopping, and amenities (Ewing, et. al., 2008), curtailing urban sprawl and allowing more green and open spaces to be created. Also designing for greater mix uses – residential, businesses, retail stores to and allow for more pedestrian and sidewalks are effective measures that can be used discourage urban natural resource intensity.

However, whether architects become ‘city changers’ crucially depends on the extent to which the profession embraces and mainstreams the concept of sustainable development into architectural education and practices. Although, attitudes are changing, there is still

considerable resistance within the profession to the concept of sustainable development by many architects and architectural practices, as reflected by the view of an architect on this issue from one of the many architectural blogs on the internet:

> "***…… the premise of sustainable development poses some really tricky issues for architects, i.e. people who are in the business of designing new buildings…people whose job it is to make things that use lots of natural resources and consume lots of energy…people who build new office towers for wealthy corporations, replacing open space ["nature"] with overly-air-conditioned cubicles. See the problem? Let me illustrate the dilemma a little further by explaining a change that has taken place with regards to the architectural conception of "footprint." Pre-sustainability, a building's "footprint" was simply where [and how] it interacted with the ground – the surface or space occupied by a structure. Today, the understanding of an architectural "footprint" has expanded to incorporate the much more abstract notion of the building's impact and demand on the environment at large – the embodied energy it consumes and the carbon it emits. This change was initiated in part by ecologist William Reese's book Our Ecological Footprint: Reducing Impact on Earth, and has been expanded by the recent media emphasis on carbon counting and offsetting. Whereas the first type of footprint can be represented by a drawing of the building [a "plan"], the second requires a vast array of scientific modelling and measurements, life-cycle analyses, data tables and excel spread sheets. The premise of sustainable development carries with it a moral imperative to "minimize footprint." Taken to its logical extreme, this injunction is incompatible with the very act of building – not building always has a smaller footprint than building. Architects, from the outset, find themselves in a compromised position. Unable to achieve the ultimate goal ["minimize footprint," "leave no trace," etc.] they must constantly weigh various options, trying to anticipate which undesirable option will make their work the least bad",***

This view is not an isolated one, but a critical analysis of the view above is one of culture, change and generation gaps, and expect architectural practices that draw in 'young blood' to have little apprehensions about the "vast array of scientific modelling and measurements, life-cycle analyses, data tables and excel spread sheets" necessary for acquiring informed knowledge about the likely impact of every components to be used in the construction of the built and urban forms on the natural environment.

Nevertheless, there are other areas where the fears of architects cannot be dismissed, especially where sustainability of buildings is not enforced, and clients are themselves particularly less interested because of the perceived front-loaded costs. This could mean clients voting with their feet to non-sustainability based-architectural practices. Similarly, where there are no rigorous enforcement regime that monitors the implementation of building regulation to ensure that what has been approved is what are built, architects find the time and efforts put into meeting the challenges of enhancing the sustainability of buildings, hence urban forms, as waste of their time.

Generally, where architects need to make the necessary strides towards sustainability and actively mainstream the concept into design and practices is through architectural education. Here, there are still many 'ostrich architectural schools' around the world whose heads are buried in the sand, and who still regard anything design, as a departure from the core value of architecture. To such institutions, and to some extent practices, apply sustainability to design dilutes the aesthetic qualities of forms. According to Sharro (2005):

> "***In order for architecture to be "sustainable" it needs to exercise conscious restraint and redefine the parameters of what is acceptable. I will stress the phrase 'conscious restraint' for this is the immediate implication of sustainable architecture. It does not respond to actual scarcities, which it cannot ignore in any case, but to 'artificial scarcities' that only exist because of a system of moral accounting that redefines the position of humanity in the world***".

This views Sharro (2005) relate to those of climate sceptics and one that if architect were to take full cognizance of, would result in 'business as usual' architectural practice. However, evidence abounds showing the devastating manifestations of climate change (Ebohon, 2006), and these cannot simply be ignored.

## Conclusion

Evidently, there is no doubt that architects have the potential to be 'city changers' in the age of sustainable development. The pace of development and the insatiable demands for natural resources is unsustainable because of the huge burden on the regenerative capacity of the biophysical environment. Architects, because of their roles in the formation of urban form, have a pivotal role to play in meeting the challenges faced by cities, which is rapidly undermining its functions as 'engines of global economic growth'. However, architects must

mainstream sustainability into practice and this must reflect in designs and urban forms they help create. Education and personal development presents the best opportunities for Architects to mainstream sustainable development into practice.

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**Title: Sustainable Communities Abuja Urban Planning 2050**

Louis Gyoh[1] , Ramatu Aliyu[2]
[1]Principal Partner, Yorkshire Consult Architects, Abuja, Nigeria
[2] Principal, Planned Shelter Consult, Abuja, Nigeria

**Abstract**

The new capital of Abuja, Nigeria was envisaged with a view to develop a new capital city without the shortcoming of Lagos. Unfortunately, Abuja has been ploughed by over population, congestion, unsatisfactory social, physical and environmental planning.

This paper will provide an overview of designers' vision of idealised city of Abuja in the mid-21st century. This study will examine the new value and life style that Abuja will hold for its inhabitants, within the context of Environmental sustainability, society and economy. The various viewpoints will be examined with the ultimate purpose of stimulation debate and developing pragmatic solution for future challenges.

The state of the city capital of Abuja suggest a serious lack of understand of the complex reality which planners are dealing with. Abuja seems to lack an appreciation of the complex and rich inter relationship between phenomena, which gives rise to successful cities. Cities are the dynamic force of modern economies. They generate wealth and prosperity that no rural idyll could hope to match – with 50% of the world's population living in cities and towns the environmental future of the planet is closely linked to sustainable urbanisation. Good environmental management must prioritise the urgent needs of the urban poor. Sustainable development of cities will depend on closer work with majorities of the urban poor who are the true city builders, tapping the skills, energies and resources of neighbourhood groups and those in the informal sector.

Key words: Abuja, Sustainability, Environmental, Planning, Management

## Introduction

The Master Plan of Abuja was carried out by Kenzo Tange who viewed planning mainly in terms of design and aesthetics (NIA 2005, Olomola 2008). This paper is advocating for a new kind of planning altogether, one which analysis and understands how cities and regions function spatially in economic, social and environmental terms. Viewing cities as systems of interconnected activities implies considering them economically and sociologically as well as physically and aesthetically.

The acceptance of Abuja urban changes also suggest a view of Abuja's planning as an ongoing process of monitoring, analysing, and intervening in a fluid situation, rather than an exercise in producing 'once-and-for –all' blueprint for the ideal future form of a town or city. This calls for a proper development and periodic review of a strategic plan.

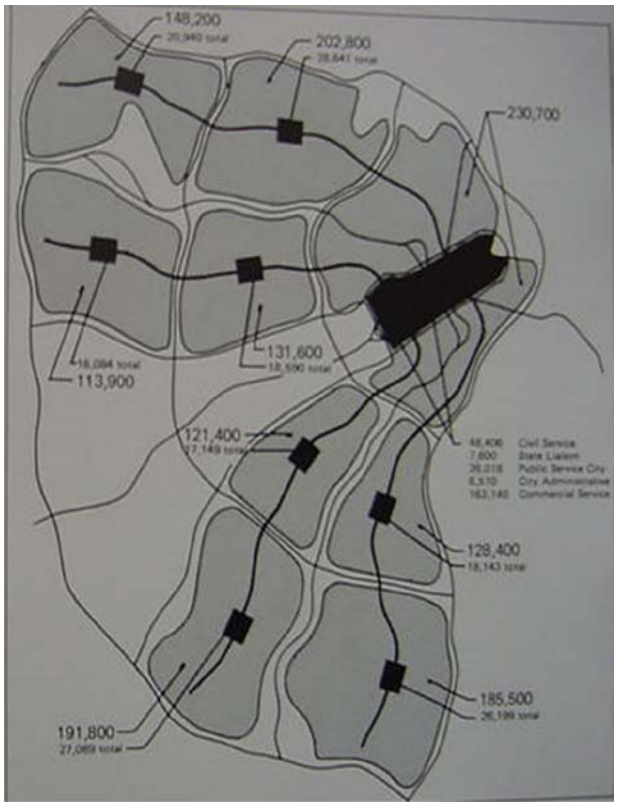
## Environment

Nigeria like most developing countries migration tends to be rural – urban in search of economic opportunities and living standards (Jenks, Burtton, Williams (eds) 1996).

The high dependence on the government as the major generator of economic activity has fuelled rural urban migration. The government of Nigeria has concentrated its attention to the development of urban settlement and cities, George (2009).

This has made the Abuja more attractive than its satellite and rural areas. This has resulted to an almost uncontrolled influx to Abuja the federal capital city of Nigeria. Abuja urban planning has not kept pace with the urbanisation, NIA (2005). It may be argued that appropriate and effective strategic planning have not been developed and or reviewed periodically. Recent interventions had been too little and too late.

Abuja master plan was produced by International Planning Association USA to guide development of the recommended organisational structure for the city. The current major challenge of Abuja is that: the population explosion far outstrips the figures city was planned for. Abuja was planned for approximately 3 million inhabitants. However, the currently population of Abuja is in excess of 7 million. This has put the cities services and associated infrastructure under considerable pressure. The current trend is hardly sustainable and might lead to a complete break down if this is not address effectively.




**ABUJA Master Plan**

The environmental effect of over population in Abuja has place enormous pressure on its infrastructure and other public facilities (NIA 2005, Olomola 2008). The impact of environmental degradation and unsustainable practices cannot be over emphasised. Environmental challenges are often relocated from the centre of the city to its satellite and surrounding settlements. This study analyses the options available to strategic planners and designers in redressing these adverse trend and reposition Abuja for a more environmental and economically sustainable development come the year 2050. This paper also explores various systems that might be put in place to ensure low-carbon fuel and conservation of resources within the context of sustainable development of Abuja. The proposed strategy would also seek to minimise the impact of Abuja urban development on ecology. Post-occupancy evaluation and bench marking would be introduced as part of sustainable community development initiative in Abuja – towards a more sustainable Abuja come 2050.

**Cultural Exchange**

Abuja is keeping abreast with the global information technology revolution. This is currently playing a big rule in life and cultural exchanges in Abuja. This is even more likely to play a bigger rule in the social economic development, historical and cultural evolution of Abuja. The internet is likely to affect the nature of work, educational practices and transportation requirement as a component of development in the future.

**Life**

This research study also review the frame work for appropriate strategic planning that would address the impact of population growth, demographic shift and expanding diversity of lifestyles with regards to housing, community services, recreation, health care and educational requirement. The effect of planning and architectural systems as they relate to the future urban development will also be examined.

**Table 1**: Abuja Land Use Analysis

| **Land Use** | **Ha** |
|---|---|
| Government Activity | 500 ha |
| Services | 891 ha |
| Residential Land | 12, 486 ha |
| Light Industry | 920 ha |

| | |
|---|---|
| Transportation Infrastructure | 1, 840 ha |
| Commercial | 561 ha |
| Open Space & Recreational | 8, 300 ha |
| Total | 25, 498 ha |
| Total in $Km^2$ | 250 $Km^2$ |

*Source: Olomola ,A. The Review of Abuja Master Plan*

**Localising Agenda 21 in Abuja**

This study advocates the Localisation of (United Nations) Agenda 21 programme (LA21) for Abuja and it suburbs. This would help authorities in secondary towns to achieve more sustainable development by implementing an environmental planning and management process to identify and address priority issues.

In secondary settlement around Abuja city such as Karu, Nyanya and Lugbe millions of people live in over crowded poorly serviced neighbourhoods Olomola (2008). They lack clean water and adequate sanitation, their garbage is uncollected and the air that they breather is polluted. Local authorities have been unable to effectively keep pace with the rapid growth of these settlements and the poor suffer most NIA (2005).

**The Response**

The Localisation of Agenda 21 (LA21) Programme would help the local authorities in Abuja and its environs to use Environmental Planning and Management (EPM) to identify and address key environmental issues. The programme should focus on the sustainable development of secondary towns SCP (2006). LA21 would build the EPM capacities of local authorities and support human resource development. The programme would encourage partnerships between various local actors, mobilising resources and promoting exchange between cities facing similar problems.

Some of the key objectives of the programme which is consistent with some of the objective of LA21 are:

- To improve urban environmental planning and management processes by supporting city demonstration projects, assisting policy development and promoting decentralised city-to-city operation.
- To build local institutional support for environmental planning and management by creating partnerships with selected local institutions, supporting networks of national and regional technical institutions and supporting national adaptation of EPM tools.

In assisting the local authorities to implement demonstration project and improve their capacities to deal with priority urban environmental issues in Abuja, LA21 responds directly to the challenges of the Millennium Development Goals, and particularly Goal 7, Target 11, which seeks to improve the lives of 100 million slum dwellers by the year 2020. SCP (2008)

**The Approach**

The LA21 Programme targets secondary cities which often lack the competencies needed to deal with their evolving environmental problems, and may not be benefiting from international support, by using the participatory EPM process, each town can create a shared vision for its future development building on the Environmental Profile main findings, SCP (2006). Local authorities may develop sustainable Action Plans to tackle existing environmental problems, using this vision.

**Proposed Activities at the City Level**

- Preparation of strategic Action Plan based on the development vision of Abuja city – say in year 2050
- Demonstration projects
- Local authority capacity – building
- City-to –city co-operation initiatives

**Thematic Areas**

Some of the thematic areas that require attention in the development of Agenda 21 a sustainable city programme for Abuja are:

- Community-based solid waste management
- Urban mobility
- Cultural heritage management and promotion of tourism
- Sustainable water management
- Access to urban services and social integration
- Revision of mater plans

- Establishment of municipal environmental management system.

This study recommends that the Abuja authorities subscribe to lessons learnt from the Sustainable City Programme (SCP) which was started in the early 1990s to support both the mission of UN-Habitat and United Nations Environmental Programme (UNEP). Currently, the SCP and its sister programme Localising Agenda 21 operate in over 30. Abuja should participate in some of these programmes to focus and accelerate its sustainability agenda.

**Focus**

A strategy should be developed, in Abuja, to package urban Environmental Planning and Management (EPM) approaches, technologies and know-how. An EMP capacity development infrastructure – facilitating sub-regional resource network for wide impact. This may be achieved by adopting the following approaches:

- Strengthening local capacities to address urban environmental priority issues
- Enabling replication and scaling-up of EPM activities
- Mobilising anchoring institutions for EPM support

Previous studies has also identified that, targeting municipalities and local partners in Abuja is likely to be more effective George (2009).

**Donor and Technical Support**

Multi and bilateral external support from UN-Habitat, UNEP, UNDP, ILO, the World Bank, the Netherlands, Japan, France, Denmark and the United Kingdom. (http://unhabitat.org/content.asp , March 2011)

**Strategy**

Some of the more effective strategies as identified by this study, based on other case studies of similar nature, include: UN Habitat (2009)

- Developing broad-based stakeholder involvement in city development strategies.
- Participatory problem – solving through inclusive processes and pro-poor governance
- Mobilisation of local resources and commitment
- A framework for capacity development and support for institutions leading to better implementation.
- Mainstreaming environmental concerns in urban planning and management
- An instrument for implementing UNEPs Agenda 21 mission at the city level and the environment component of the Habitat Agenda, the Declaration of Cities and other Human Settlement and the Millennium Declaration.

**The Process**

The Sustainable Cities and Localising Agenda 21 Programme promote a city management methodology (process) which has shifted fundamentally from the traditional technology driven and resource focused development models UN Habitat (2008).

The Environmental Planning and Management (EPM) framework represents one such approach, which allows priority environmental issues in a city to be effectively addressed. It is a process orientation framework, which permits the different stakeholders to negotiate strategies and seek solutions collectively to priority issues of common concern Nigel (2004). The process consists of a logically sequenced interactive set of activities whose systematic implementation and infusion into institutions will lead to profound changes in the way development issues are perceived and addressed.

**Environmental Profile**

The Sustainable City Programme (SCP) and LA21 – Process starts with the preparation of an Environmental Profile and the identification of priority issues SCP (2006). Key stakeholders from the different sectors – private, public and community – are involved through a consultative process in the preparation the profile and identifying the priority issues facing the city. In some cities, steering committees and small consultative groups that would include key stakeholders initially spearhead this in Abuja. The Environmental Profile has two purposes:

- It provides base line data and information on activity sectors, the environment setting and management arrangements; and
- It highlights the interactions prevailing between development and the environment and between and different activity sectors, interactions which are triggered through the competing uses of natural resources or which manifest themselves via the primary and secondary effects of environmental hazards resulting from sectoral activities.

**City Consultation**

The preparation of the Environmental Profile for Abuja should be followed by a City Consultation where stakeholders from all levels of government and relevant sectors come together to deliberate and agree on the priority issues confronting Abuja city. The proposed Abuja City Consultation in the context of SCP/LA21 may have the following objectives:

- To identify and review priority urban environmental issues;
- To bring together key actors from the public, private and popular to jointly develop an improved cit management process;
- To establish a cross-sectoral working approach
- To determine how the necessary resources can be brought together to address the issues.

In many cities where this has been done elsewhere, for example in Lusaka Zambia SCP (2007), City Consultation has been acknowledged as a unique event which for the first time

brought together a large and diverse group of people, provided broader exposure and awareness and inspired a new sharing and responsibilities and pulling together of resources to resolve issues of common concern. The proposed Abuja City Consultation should be conducted through well-structured meeting modules that combine plenary and group discussions

**Working Groups**

Working Groups are normally set up for the City Consultation SCP (2000). However, they are based on the priority issues agreed at the consultation, and so start working fully after the consultation. The critical task is setting up a Working Group is to ensure that the fully range of key stakeholders is included SCP (2000). Each Working Group has a designed coordinator to facilitate the meeting and discussion and to ensure follow-up.

This was done successfully in a similar project in Chennai, India, to ensure proper coordination among the various Working Groups. The SCP Working Group differed from other committees and had the following characteristics: Each Working Group focused on one particular priority issue. The Working Group deal with complex cross cutting issues that government bodies are ill-equipped to deal with; the Working Group have representation and participation from a wide range of stakeholders; the Working Groups use a common operational framework – the SCP process; the Working Group is flexible and readily adaptable to changes in terms of focus, members, activities and action; The Working Group are not 'talk shows', but organised mechanisms for informed discussion and analysis, negotiation and consensus-building, collaboration and formulation of strategies, action plans and implementation of projects. The working group process is based on the willing cooperation of the stakeholders. It develops gradually as the stake holders become convinced that the working group is evolving a new and more effective way to collaborate and address urban environmental issues SCP (2008).

**Strategies and Action Plan**

The key task of the Working Groups is to formulate issue-specific strategies and action plan. To do this, the Working Groups first clarify the issues raised at the City Consultation Different aspects of the issues are systematically explored and consensus built on understanding the issues.

The Working Groups need to formulate issue-specific strategies through a four step process:

- Defining goals and objectives
- Assessing and negotiating strategy options
- Considering resource availability and implementation possibilities
- Agreeing on strategies and mobilising support

Since the stakeholders themselves conduct the whole process, there is often a reasonable degree of consensus on the strategy options SCP (2007)

Once the strategy options are clear, they need to be translated into concrete programmes for implementation. This is the action planning process. In an SCP project this includes the following steps SCP (2006):

- Evaluation alternative courses of action
- Prepare brief on agreed course of action
- Determine the tasks and actors involved
- Determine required resources
- Identify gaps and weaknesses
- Reconfirm commitments
- Agree on a coordination mechanism
- Agree on indicators and monitoring mechanisms

The whole process of formulating issue-specific strategies and action plan is the 'heart' of the Sustainable City Programme (SCP) process. The success of the SCP project will depend on the ability of the Working Groups to properly formulate strategies and convert them to action plans that lead to real implementation. This technique as successfully applied to an SCP initiative – "Strategy for improved urban mobility in Bayamo, Cuba" , SCP (2006). This study proposed similar techniques for the proposed Abuja Sustainable City Programme/Environmental Planning and Management towards a more sustainable Abuja come 2050.

**Consolidation and Institutionalisation**

In all activities and phases of a Sustainable Cities Programme demonstration project, institutionalising the Environmental Planning and Management (EPM) process remains the overarching objective which will continue to engage cities long after the project has been completed, SCP (2000). This was the experience in Tanzania, which also lead to the institutional sating EPM in Tanzania, SCP (2007). It is hope that at the end of the proposed exercise Environmental Planning and Management that result from the exercise will be consolidated and institutionalised in Abuja

## Measuring Progress

Sustainable Cities Programme has developed has developed a simple methodology that cities may use for the assessment and monitoring of improvements in decision making, SCP (2007). The study proposes that the Abuja sustainable city programme should adopt this methodology rather than re invent the wheel. The methodology uses indicators that have been designed to assess the participation of the various stakeholders in the different stages of the decision making process. Measured over a specific period of time, the indicators will reveal whether there has been any improvement in the participation of the various stakeholders in decision – making.

The participatory decision-making indicators are based on ratings provided by the stakeholder groups themselves. Each stakeholder group rates its own performance against a scale of 0 (totally negative appraisal) to 3 (totally positive appraisal), SCP (2000). Four indicators are provided to correspond to the four decision-making process activities. In each instance, various questions are laid out to assist in rating the activity. The rating of each indicator are recorded on a reporting sheet and charted on a bar graph that provides a visual analysis of the decision-making process, SCP (2008).

## Conclusion

Disillusioned with traditional master plan approach to urban management, cities throughout the world are searching for new approaches to governance and administration. Their previous experiences show that:

- Mobilisation of local resources is more effective than master planning
- Broad based stakeholder involvement is more effective than master planning
- Bottom-up problem solving is more effective than top-down decision making and
- Need driven strategies and actions are more effective than supply driven studies and plans.

Sustainable Cities and LA21 programmes promote a city management methodology/process, which shifts fundamentally from the traditional technology driven and resource focused development models to a process oriented frame work which allows priority environmental issues in a city to be effectively addressed. A process which permits the different stakeholders to negotiate strategies and seek solutions collectively to priority issues of common concern in Abuja and its environs. Initiatives should be locally defined and cities and local communities should be firmly in control of the direction and content of assistance offered by external agencies.

A Sustainable City Programme initiative for Abuja and the Federal Capital Territory will go a long way in ensuring a more sustainable Abuja City in 2050. Developing an all-inclusive Environmental Planning and Management programme where all stakeholders are invited to participate on issues of common concern. This is likely to be more success with regards to implementation and infusion of EPM into existing institutions. A survey carried out as part of this study suggests that this might lead to a change in the way development issues are perceived in Abuja.

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